THE "GERASIMOS"–"THEOFANO SIDERIDES" COLLISION (Illus.). *See pp.* 108–111.
"WORCESTER" PRIZE DAY. *See p.* 106. MUNITIONS COURT FINES WORKMEN. *See p.* 107.

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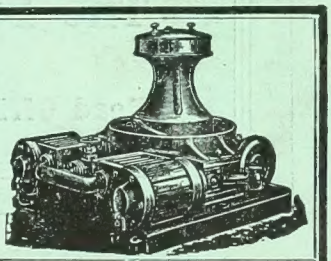

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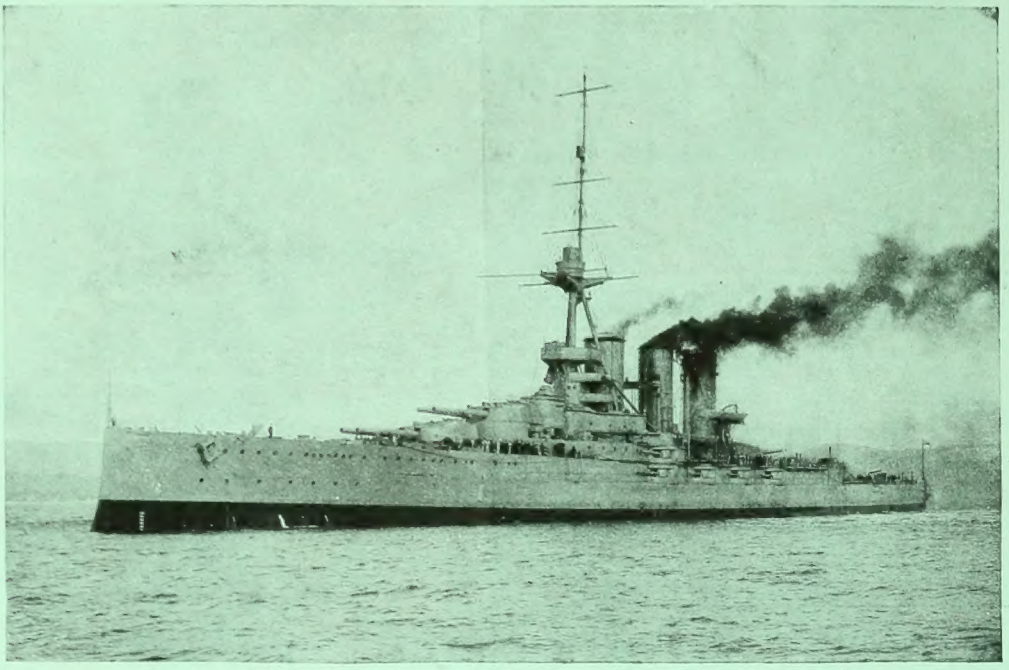

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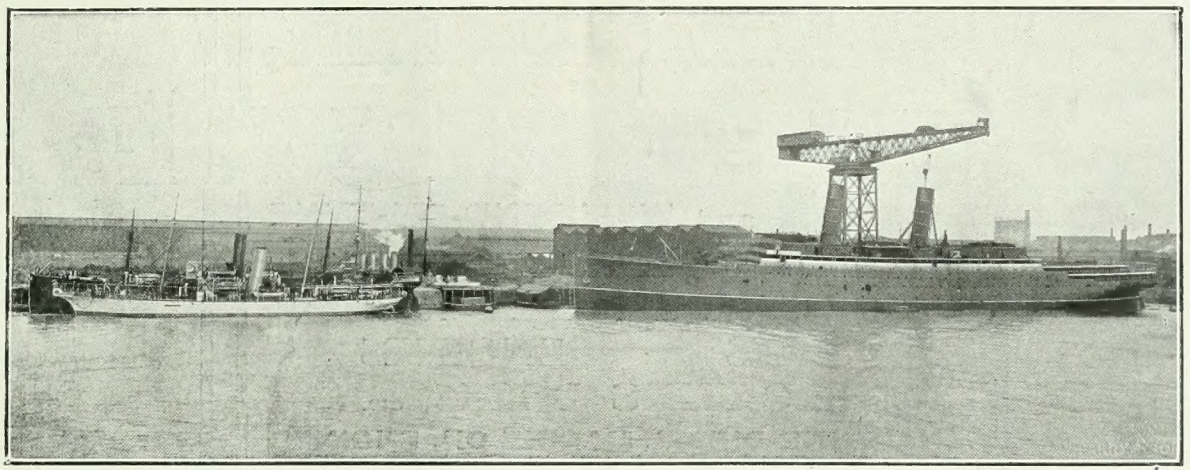

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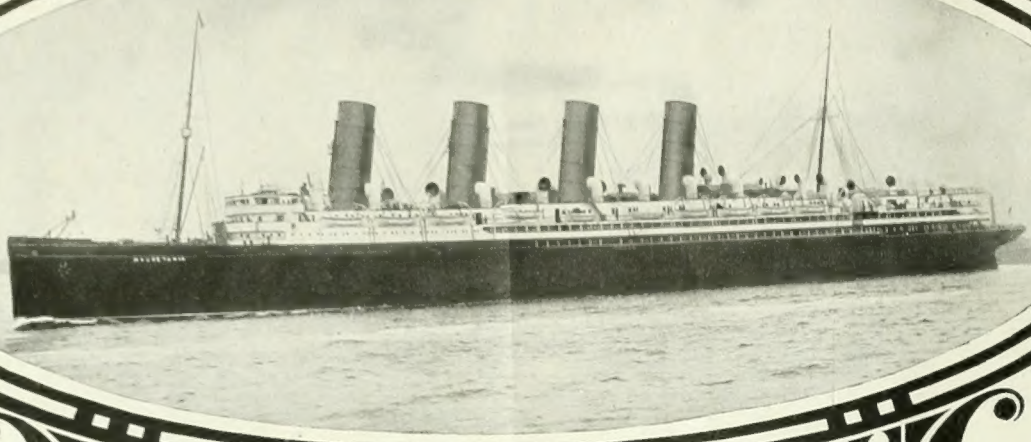

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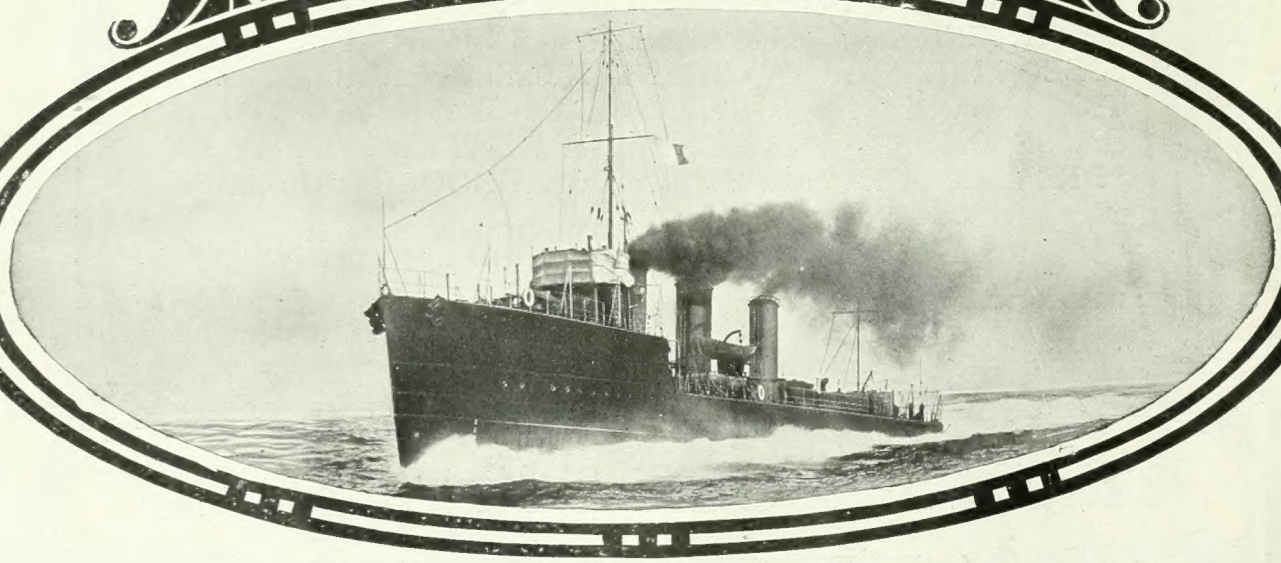

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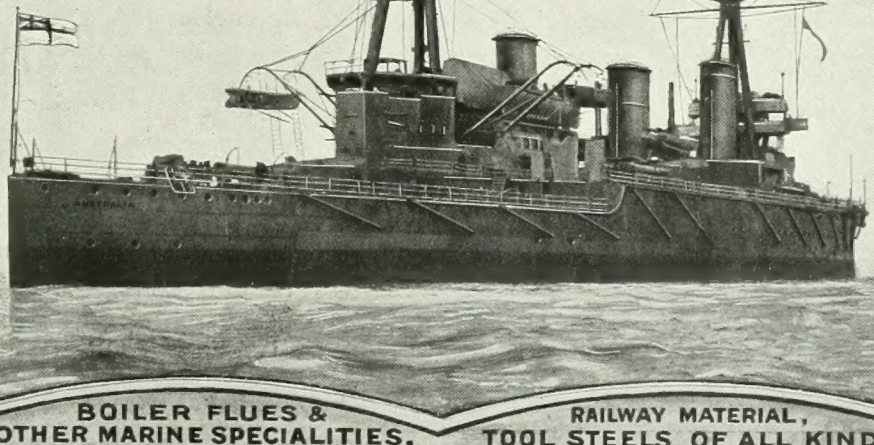

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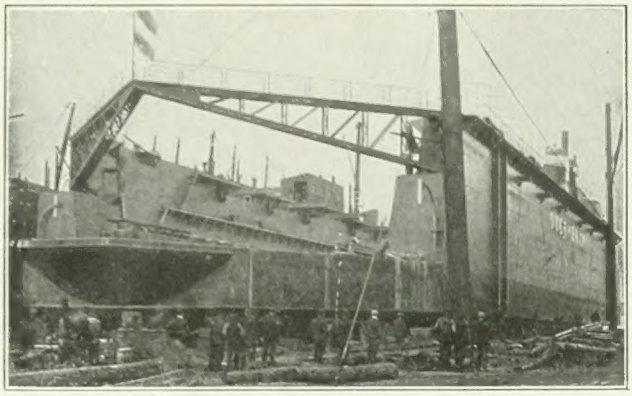

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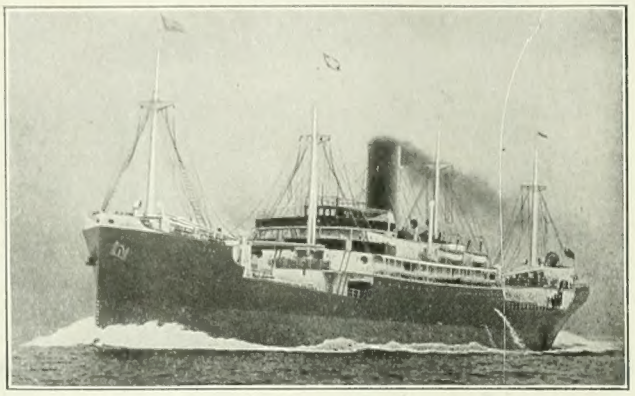

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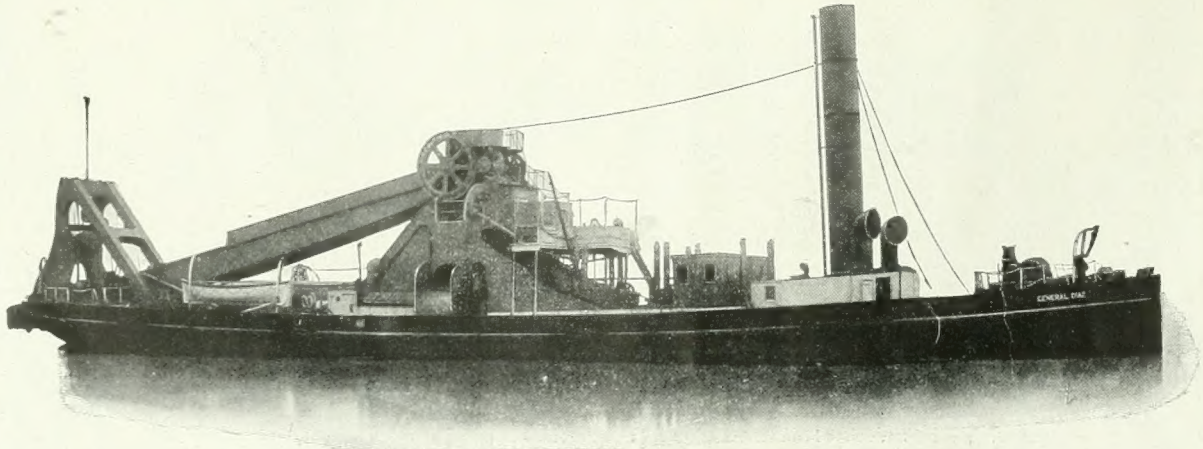

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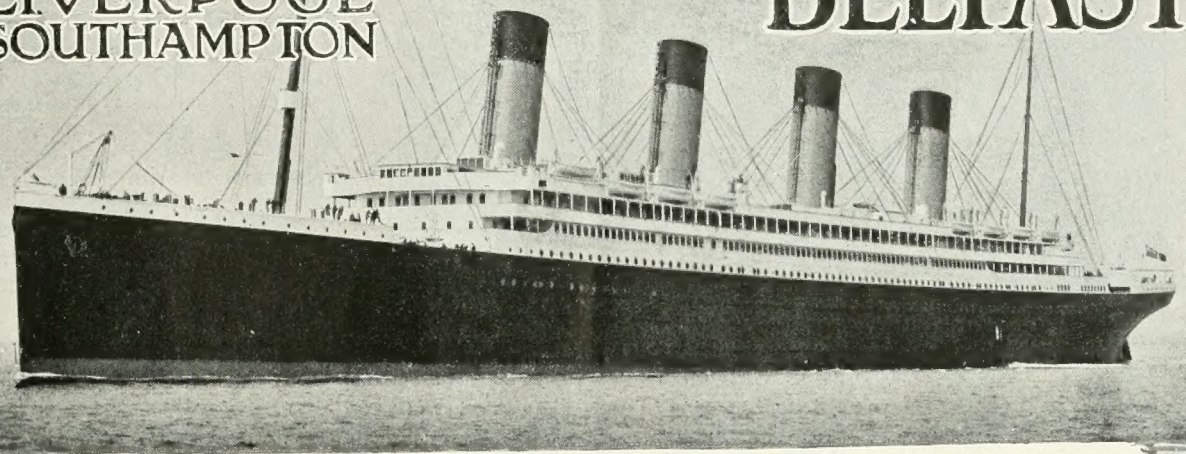

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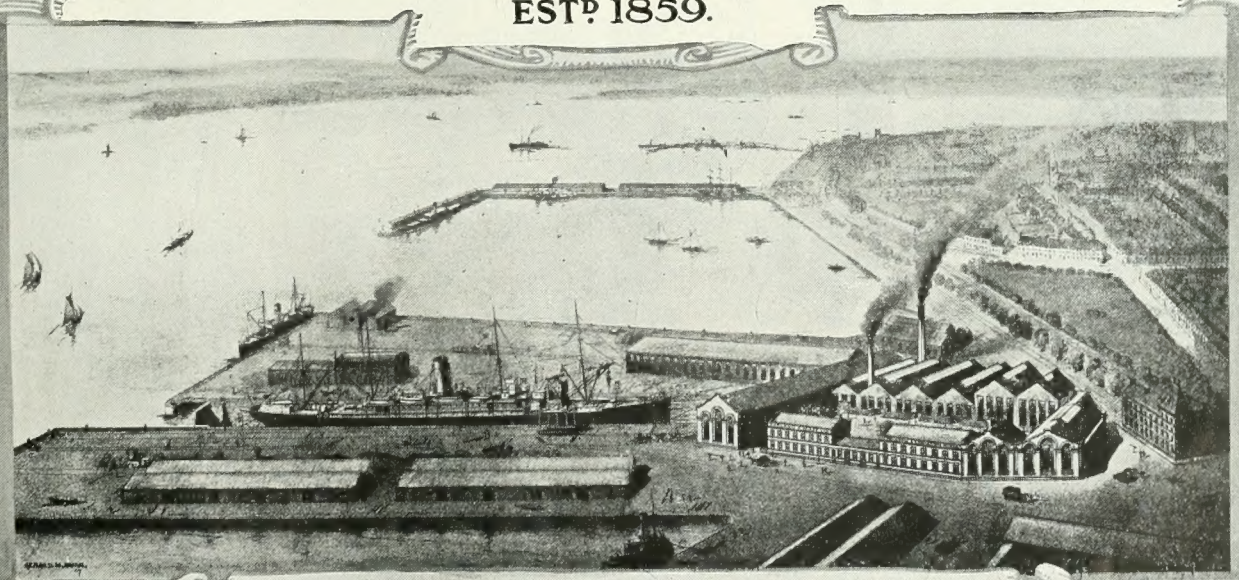

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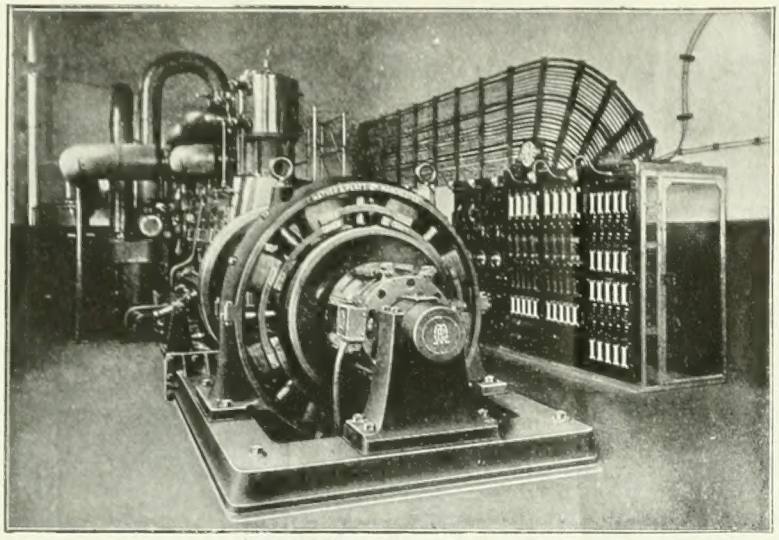

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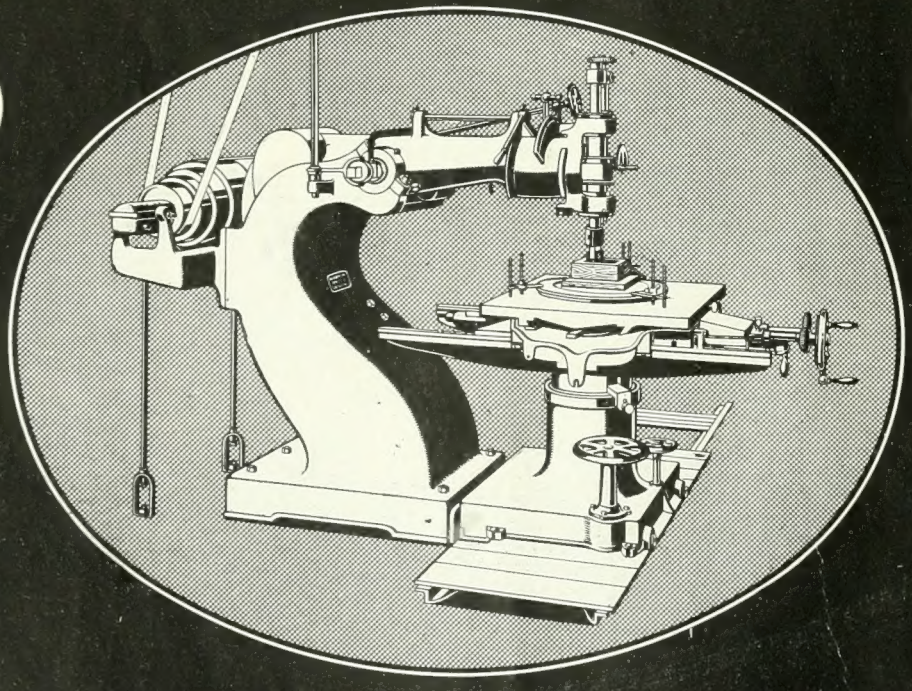

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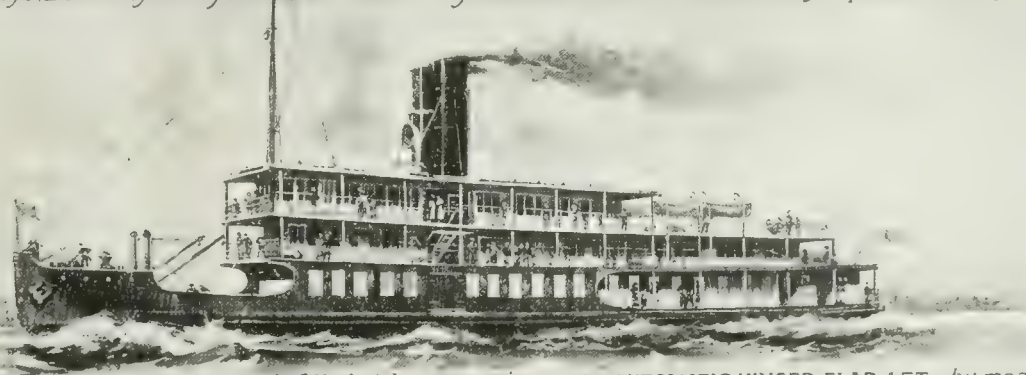

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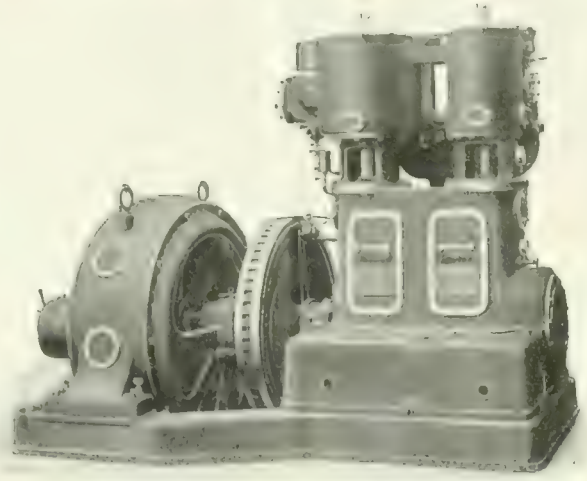

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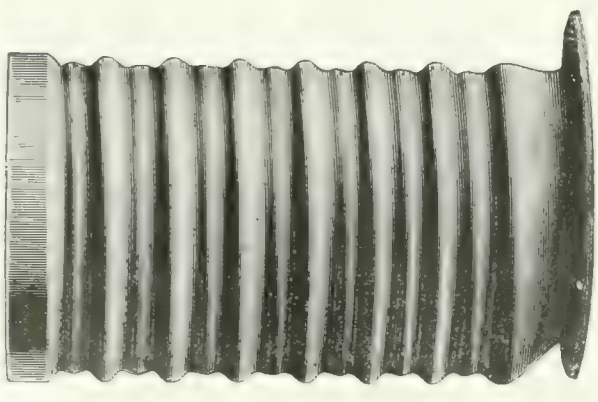

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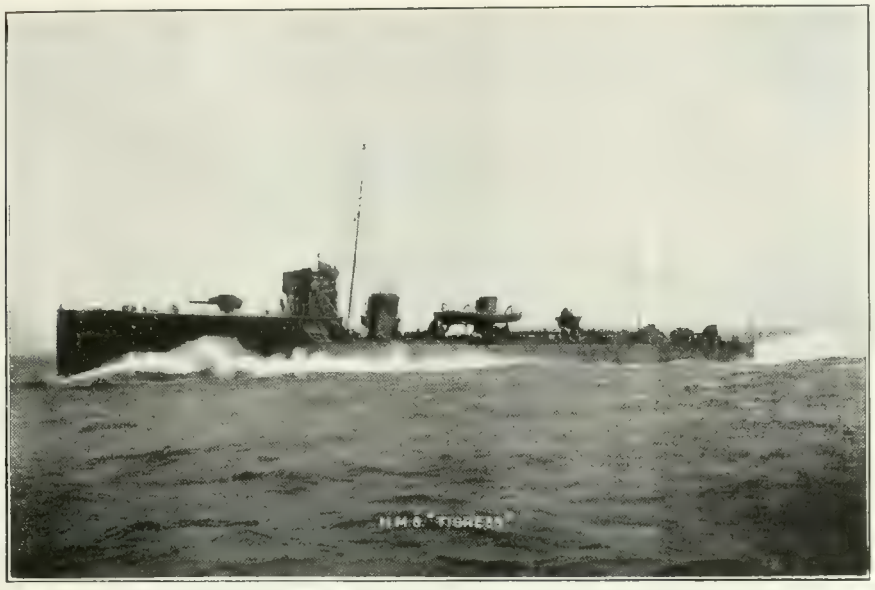

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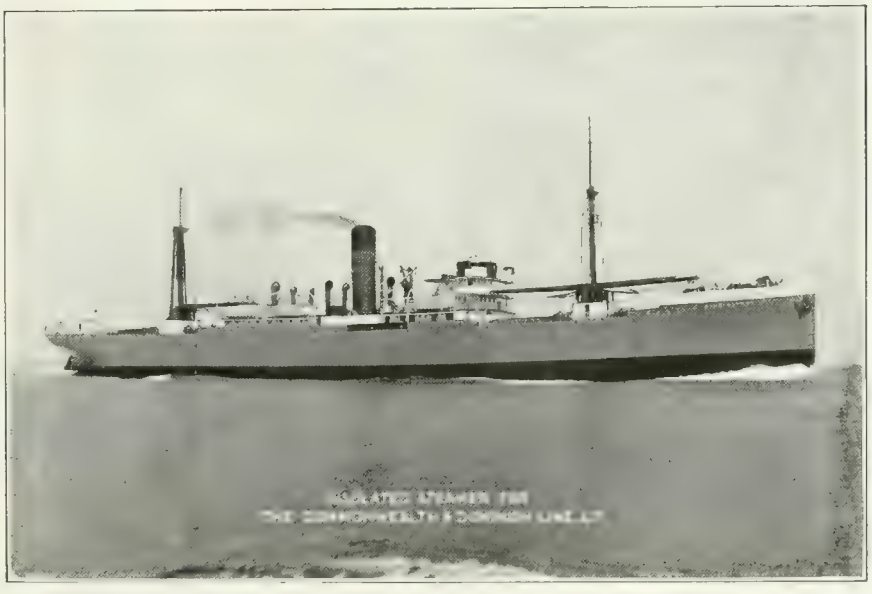

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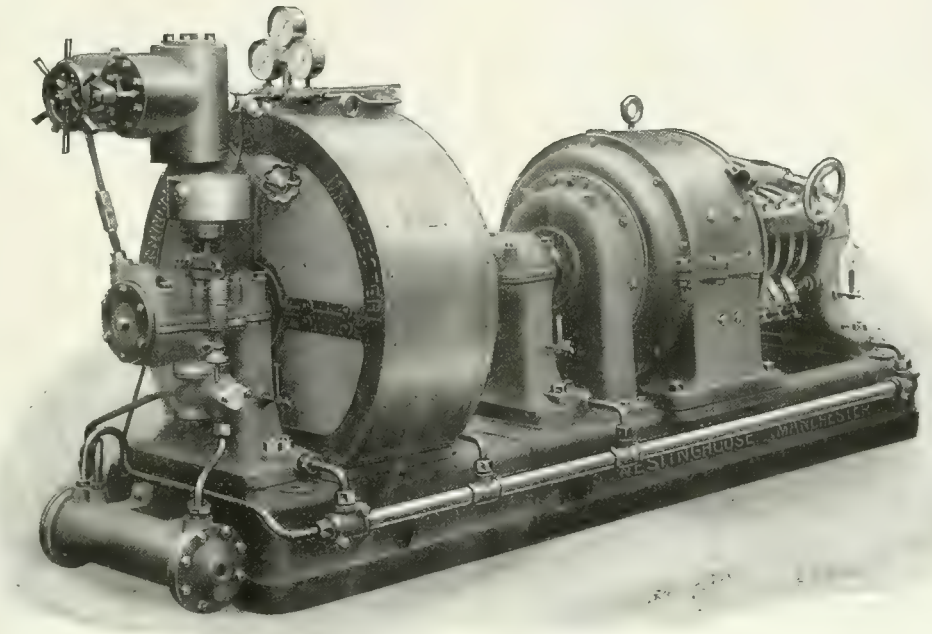

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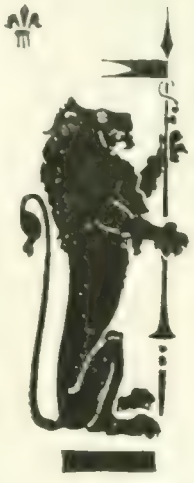

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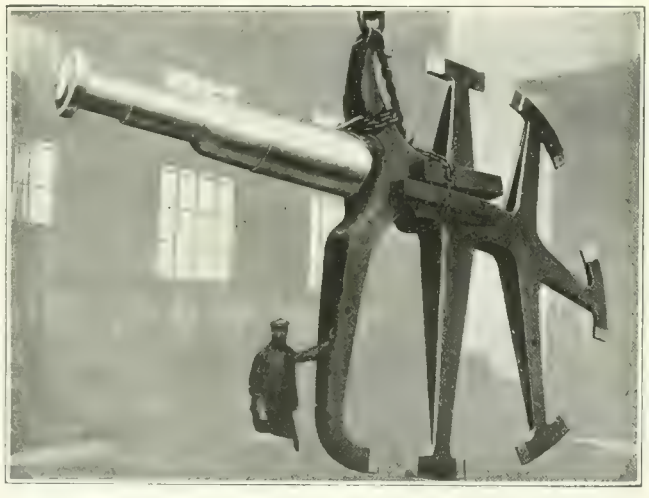

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MR. LLOYD GEORGE'S account in the House of Commons of the progress achieved to date by the Ministry of Munitions was very interesting, and but for its allusions to "slacking" on the part of the men would probably have been deemed by the public to be highly satisfactory. The new Department is improvising what will be the biggest industrial organisation the world has ever known and it promises to bring about the wonder in record time. It is, moreover, going about the business in a scientific way by concentrating as far as its other obligations will permit on the production of means of production. When its national factories—of which there are to be 26—are equipped with tools and its local committees have completed their organisations the greater effort will, of course, be the manufacture of equipments and munitions of war. Then we shall see such a production of munitions as even the wildest German would be incapable of dreaming. We need not, however, ignore the unpleasant fact that whether the Munitions' Ministry's organisation attains or does not attain its designed degree of efficiency depends upon the workmen belonging to the engineering and shipbuilding trade unions. According to the Minister there is still in many places a good deal of organised "slacking." Men are not giving the output they are capable of giving, and consider themselves to be as free as in peace time to insist on lines of demarcation. In both industries definite limits are put upon the amount of work a man or a machine may do in a given time and if they are not observed there is trouble for the operatives who exceed them. In the circular of the National Advisory Committee from which we gave an extract a week ago the causes of the "slacking" are stated quite plainly. Why they should be allowed to have the effects they are having is, however, obscure, for "slacking" of this kind is expressly forbidden in the Munitions Act. Apparently the men do not regard this Act as serious legislation, and the Government have not the courage to make the trouble plain to them. We do not desire even to appear to be pessimistic, but it is our candid opinion that trade unionists will take very little notice of the measure until they are compelled to do so.

Trade Unions and War Work.

Discipline at sea is doubly essential in war time. Some amendment of the Naval Discipline Act has been made by the House of Commons. We observe that some demand was made for further powers over crews in connection with Government transport vessels. Dr. Macnamara, the Secretary to the Admiralty, however, seemed to think that the existing powers were ample. Convictions under the Order in Council under the Defence of the Realm Act have taken place for negligence in joining ship, for absence without leave or for coming on duty under the influence of liquor. These convictions, it appears, have had a salutary effect. The matter does not end there. Prevention is better than punishment in regard to drink. Under the Munitions Act the competent authorities have obtained powers to prohibit the introduction of liquor into docks controlled by the Admiralty, and it is contemplated that these powers will be freely used. The necessity for such action is patent. The ideal to strive after in these times is to make arrivals and departures, loading and discharging work with clockwork precision, and to secure that ready attention to discipline which on the part of all ranks is essential.

Discipline on Transports.

Parliament has passed the Price of Coal (Limitation) Act. As we anticipated a good many amendments were introduced in the House of Commons. Existing contracts for coal for domestic and household purposes, and for coal to be used by public utility undertakings, such as those supplying gas, water or electricity, have under considerable Parliamentary pressure been brought within the scope of the Act. The price in those cases is therefore interfered with to the extent which it exceeds the maximum allowed by the Statute. No alteration has been made in regard to coal for export or to coal to be used on board ship. These are and remain outside the application of the Act. Deliberate policy lies behind the determination of Parliament to avoid any action to depress the price of export coal. National interest demands that in order to attain as near as can be to a balance of trade, exported coal should fetch as high a price as possible. Exports pay for imports, and if the price received for exports be high, the greater amount of imports they will pay for. We see much artificial interference with sound economic principles in the Act. In normal times of peace we would resent it as indefensible, but in present circumstances it must be accepted as an endeavour to meet the exigencies of a difficult situation.

Price of Coal.

Wages of seamen who were serving on ships detained in German ports and are now interned by the enemy remain a charge on the shipowner. This decision was given by Mr. Justice Rowlatt in the High Court. It was upheld by a majority of the Court of Appeal last week. What the Court had to determine was whether the detention of the vessel in the German port was an event which terminated the contract of service between the shipowner and the seaman. The contention put forward on behalf of the shipowner was that a loss of the ship had occurred which brought the engagement to an end. But the property in a vessel which has been merely detained in terms of the Hague Convention in contradistinction to a vessel which has been confiscated by a decree of a Prize Court has not passed from the original owner. Lords Justices Swinfen Eady and Bankes held to the view that there had been no loss of the ship and therefore the contract of service remained in force. Lord Justice Phillimore, in dissenting, pointed out that the prolongation of war under such circumstances might lead to the financial ruin of the shipowner who had to continue to pay the wages. We think that this side of the

Wages of Interned Seamen.

question is a very practical and serious consideration. If the dependants of the interned seamen were left without means of support, that would also be a hardship. Apart from the legal construction of the relevant provision in the Merchant Shipping Act which the Courts had to apply, a most reasonable suggestion was thrown out by Lord Justice Phillimore. He suggested that financial provision for the dependants should be made from the public funds and the shipowner divested of the liability for payment of wages. That view did not prevail, but the fact that the state of war which led to the internment of the seamen resulted from the action of the State and not from that of the individual shipowner lends great weight to the suggestion of the dissentient judge. As we once pointed out previously, the decision that the shipowner remains liable for wages applies only to cases where vessels have been detained.

Canadian Shipping Problem.

During the past few months there has been an increasing shortage of steam tonnage in the Canadian trade, with the result that shipments from the Dominion are being seriously curtailed. And the situation in this respect has been made considerably worse by the transfer of many Lake boats to the Atlantic, so as to take advantage of the high coasting freights now ruling, this diversion, naturally, decreasing inland transport facilities, and causing congestion at the various ports. In view, therefore, of the impending harvest, which is expected to produce a record wheat crop of about 250,000,000 bushels, the Canadian Government is, we understand, taking steps to bring about a release of a number of steamers now engaged on war service, and, in fact, it is known that such a scheme has been discussed by Sir Robert Borden with the Admiralty and the Board of Trade. Indeed, it is considered to be not at all improbable that even stronger action may be taken, and that many ships may be requisitioned specially for the purpose of facilitating the export of food supplies from Canada. For a long time exporters there have been of opinion that ocean rates should be controlled by the State, and the adoption of this policy would have been strongly urged upon the Dominions Royal Commission, if its proceedings had not been suspended by the outbreak of war. Permanent Government control would not, of course, be to the advantage of shippers—at all events, every scheme of the kind has so far proved a failure—but in the circumstances it would, doubtless, ease the situation although probably with loss to the authorities concerned. Admittedly, the problem is as urgent as it is serious.

Coal Shipments by Barge.

Mr. Plisson, head of Messrs. Lysberg, Ltd., coal exporters and pitwood importers, Cardiff, and of the Plisson Steam Navigation Company, Ltd., has inaugurated a service for barging coals to France and Spain from South Wales and returning with pitwood cargoes. In order to carry out the scheme Mr. Plisson purchased the coasting steamer *Harrington*, which was converted into a tugboat, and two sailing vessels, the *Glenmarle* and *Segura*, each 2,800 tons d.w., which were made into sea-going barges. The barges will have patent tow ropes to counteract the heavy strain experienced in crossing the Bay of Biscay, and the idea is to have one discharging or loading on either side of the Channel while the third—to be purchased—is crossing. The vessels between them will carry 8,000 tons of coal or 6,000 tons of pitwood, and the scheme will cost about £30,000. Should it prove successful it is intended to have built specially constructed sea-going barges of between 3,000 and 4,000 tons carrying capacity, fitted with wireless. The scheme has been inaugurated in an endeavour to counteract the many difficulties which are met with in the coal and pitwood trades. Often it happens that on the arrival of steamers with pitwood in South Wales railway wagons are so scarce that either importers incur heavy demurrage costs or have to sell the wood at a considerable sacrifice while on the other hand congestion on the Continent often results in boats having to wait for unloading berths. The barges, in such circumstances, could be unhooked and left while the tug could cross the Channel for another barge, thus saving a considerable amount of time and money.

Transfer Cargo at Panama.

The total of all cargo going through the Panama Canal has been something more than 500,000 tons per month. The transferred cargo shipped through the Canal has varied considerably but amounted to 19,323 tons in the month of May, when the total cargo was 578,708 tons. The great bulk of the Canal cargo is through-shipped goods, travelling between ports remote from the Isthmus, and most of the vessels going through do not discharge or take on any cargo at the terminals. The relatively small portion which is transfer cargo affords a striking index to the fact that a great quantity of goods is passing through the Canal. For the transfer cargo now handled is about two-fifths of the movement of through freight handled over the Isthmus on the Panama Railroad during the two years preceding the opening of the Canal. The railway at that time was supposed to handle more tons per mile than any other railway in the world. Traffic one-twelfth as great as the present traffic of the Canal kept a well-equipped railway exceedingly busy. From the quantities of transfer cargo which may be seen on the piers at the terminals, an idea is gained of the vastly greater quantity of goods moving through the Canal without discharging any cargo whatever.

Pledgees of Enemy Property.

Claims of British pledgees of enemy property seized as prize are not recognised by the Prize Courts. That principle was laid down in many cases by Sir Samuel Evans, the President of the Admiralty Division, and the Judicial Committee of the Privy Council has, in the case of the *Odessa*, upheld his decision. Therefore, as a legal proposition this has now the sanction of the highest tribunal. We gather that this decision will not preclude the Claims Committee considering the position of individual pledgees, and if it appears to them a case in which the Crown's bounty might as a matter of grace be exercised to restore what the strict letter of the law takes away, they may advise accordingly. The case of the *Odessa* is not a solitary one of its kind. There are numerous others in which the same issue is presented, and it may be found on investigation that grave prejudice to British or neutral interests would be caused by strict adherence to the letter of the law. Whilst the law in regard to maritime capture should be administered fully in relation to enemy goods and cargoes, we should be sorry to see firms which are British or of neutral nationality, and have acted with *bona fide* frankness, suffer heavily for what in its inception was a legitimate commercial transaction.

Shipbuilding after the War.

With the shipbuilding industries of Denmark, Holland, Norway, Sweden, Japan and the United States more active than they have ever been there is not unnaturally concern here and in Germany as to the future of business. When the war is at an end these neutral countries will be, it is assumed, more serious rivals than they have yet been for mercantile contracts. Their shipbuilders are not only gaining experience but are also making money which will be, we may be sure, largely fixed in new plant and larger premises. The matter is not one about which it is wise to be definite, because there is much more to take into account than appears on the surface. With its fiscal laws what they are the United States, for example, cannot hope to compete for international business with, at any rate, British shipbuilders. American yards might do so indirectly by building exclusively for American owners if the cost of working American registered vessels were less than that of working vessels registered in the United Kingdom. American costs are, however, not lower-

but higher; so that we may dismiss from our minds the idea of danger from this quarter. Japan's case is better, for probably first costs and certainly working costs are lower under the mercantile flag of our Far Eastern Ally. The Japanese shipbuilding industry might quite easily hit us pretty severely by working through an expanding Japanese mercantile marine. How hard it hit us would depend upon the adequacy or otherwise of Japan's provision for manufacturing the material of shipbuilding. The Japanese already are highly capable naval architects. The cases of Holland and the three Scandinavian countries indicated are not greatly diss milar to that of Japan. They have prosperous mercantile marines which owe not a little of their success to low working costs, and operating intelligently in conjunction with them their shipbuilding industries might become very dangerous rivals indeed of the United Kingdom. Their dependence for material on outside sources is bound, however, to be a difficulty. It is, in fact, already hampering Holland, and may soon hamper the others. The strength of the British position is, as it always has been, that behind the shipbuilding industry there is ample provision for the manufacture of material, and in front of it, so to say, a mercantile marine which makes the most of the marvellously cheap products of its industry. British working costs are not the lowest in the world; but British first costs are. It is the combination which succeeds, and it will succeed again, we need not doubt provided the British steelmaker takes an unselfish view of the position.

Future of the Submarine.

The future of the submarine opens up a large field for speculation. It is believed that the size of the boats, the general design, motive power and principal characteristics will not change materially in the next few years except in the case of the sea-going submarine which is now being built and which departs considerably from all previous designs. As far as can be foreseen the future power of submarines may be expected to be the oil engine or some modification of the same. However, as is pointed out by Lieut. Hinkamp, of the United States navy, in his paper entitled "Submarines and Torpedoes," which appears in the most recent issue of the Journal of the American Society of Naval Engineers, engineering fields have not been sounded to their depth in the determination of adequate power for these vessels, and it is believed that the future may see some development and improvement and perhaps a material departure from any methods of propulsion heretofore adopted or proposed. The several flotillas of the sea-going type of submarines above referred to cruise with the fleet and they may one day be found in the line of battle with the destroyers. Some authorities claim that this type of submarine will eventually supplant the torpedo-boat destroyer. This is considered most improbable, however, as owing to their shape high speeds call for prohibitive powers, and with the methods of propulsion now in use or contemplated it is not reasonable to expect the speed greater than 25 knots on the surface or 15 knots submerged.

Deck Erections.

In bad weather, deck erections stand like islands above the flooded main deck. When the ship is rolling heavily, the crests of the waves may reach to the tops of the erections at the lower side. The greater the extent of the erections the lower is the freeboard, the higher will the sea climb at the sides, and the greater will be the flood thrown on deck by occasional exceptionally high waves. Worst off in these respects is a ship with a single erection extending over her whole length, *i.e.*, an awning deck. In a ship without a central island, or "'midship deckhouse," the sea has a clean sweep perhaps nearly from stem to stern. If there be a bulwark, a space of quarter length × breadth × bulwark height full of water takes the place of the 'midship deckhouse. The weight of this, amounting, it may be, to 10 per cent. of the displacement, represents an important addition to the sagging stress experienced when the ship is borne between two wave crests. The likelihood of a ship's being flooded in this way is the greater, the greater her proportion of length to depth and the less her s heer than that usual for her length. Lengthened ships have often experienced this to their cost. A sheerless ship with a rounded gunwale and open bulwarks may get rid of the flood quickly, but her stability conditions are of a dangerously deceptive nature. Centre-line trunks, which are sometimes relied on as reserves of stability, come into play too late. A shipmaster who, presuming on great initial stability, has been lavish with top weight, may find his ship lying with a 45-deg. list from which she cannot recover herself. To be safe she must be uncomfortably stiff. A well-decker will often have to pour a flood over her high bulwarks forward. The position of the well is usually favourable as regards longitudinal stresses thus set up, but the ship's stability must be a match for the careening that this causes. The dryness of a well-decker abaft the well has often with justice been pointed out. All things considered, a cargo vessel of the three-island type, with a moderate proportion of length to depth and a normal amount of sheer, will probably suffer the least from the sea.

Passenger Accommodation.

From the owners' standpoint the design of a new vessel is a matter which involves close consideration of the trade conditions in the route for which the vessel is intended. A certain type of ship may have proved its suitability for such conditions, but the shipowner has often to anticipate the desires of the travelling public and the enterprise of his competitors. These necessitate, particularly in the design of passenger ships, a continuous improvement in succeeding vessels and generally increase in size. This is particularly the case in the Atlantic trade, for which the most magnificent liners have been constructed. Since the revenue is derived almost entirely from the transport of passengers it is of interest to compare the numbers carried by the four greatest liners. The *Aquitania* carries in all 3,230, the *Britannic* 2,579, the *Imperator* 3,990 and the *Vaterland* 4,000. The gross tonnage of these vessels are respectively 45,647, 47,500, 51,969 and 54,282 tons. From these figures it appears that the German liners carry a considerably greater number in relation to their size than the British vessels do. Particularly is this the case with the *Imperator*. It has been recognised that the Cunard Company have consistently shown an aptitude for getting the most out of their vessels as regards the numbers carried in relation to their size, but on the surface it appears as if the Germans can do better. It is possible, however, that the latter attempt too much. Their experience with the *Imperator* bears out this contention. In order to get the large number of persons accommodated a deck more than the number fitted in the *Aquitania* was required. This proved too much for the stability, and drastic alterations had to be carried out in the vessel in order to make her reasonably safe. The White Star liners invariably carry fewer passengers than the Cunard ships of similar size, but make provision for a larger number of first-class passengers who probably contribute the major portion of the revenue of these huge vessels.

Electrical Equipment.

A paper entitled "Marine Electrical Engineering" was presented before Section D of the American Association for the Advancement of Science, by Mr. H. A. Horner, who remarked that the steady improvement and continued use of contractors for the control of motors has increased the use of automatic control for a varied number of applications. Dynamic braking, which quickly brings the motor armature to rest, is asserting its importance in many respects. Electricity is now solely depended upon for weighing the anchor, and although the results for all conditions of service are not known it is reasonable to believe that the applications of electricity for this purpose will warrant its continuance. Experimental work

for the last five or six years has brought electrical steering gear into what appears to be a permanent requirement. The older system did not give satisfactory results, and it was not until the development of the motor for that experimental work was again resumed. The author remarks that any type of electrical steering gear is to-day paralleled by the old steam system, but the indications are that the electric gear will supplant the steam. The introduction of oil fuel instead of coal has changed the electric forced draught fan to a steam turbine-driven fan, this being due in part to the fact that high pressure and low volume of air are required, and also to the fact that the exhaust from these fans aids the heating of the boiler feed water. The paper also indicates that in the opinion of the author electric motors will eventually take the place of the old reciprocating plant used in the engine room.

THE AMERICAN SHIPPING SCHEME.

ONE of the features of the war has been the number of flesh-creeping stories which reach us *via* a neutral country and which are intended to demonstrate some masterful intrigue by means of which Germany is about to circumvent the disabilities the war has imposed on her overseas commerce. One of the most popular stories, told in a variety of ways and differing in detail but not in the main, has been the acquisition of a German-controlled, but nominally American-owned and managed, fleet of steamers. Such a scheme is naturally one which, copied from neutral papers by the *Hamburger Nachrichten* or the *Cologne Gazette* for example, must provide a welcome stimulus to the sorely tried Teuton, whose glories of maritime power have been annihilated by the power of the Allies' navies. There was the yarn of the sale of the *Vaterland* and other interned ships to the usual "powerful syndicate." That died a lingering death, and subsequently other schemes, less ambitious in scope, but equally insidious in character, cropped up from time to time. The only events that actually came to head were incidents like the *Dacia*, whose enterprise came to an untimely end through an unsought introduction to a French cruiser. Last week, however, a Reuter message started the old, old story with a report which said that at a conference between Mr. Lansing, Secretary of State, and the Acting-Secretary of Commerce it was agreed that American registry could not be denied to 11 foreign-built steamers bought for the American Transatlantic Company, headed by Mr. Richard Wagner, of New York. "The steamers," says the cable, "are said to have been purchased at British, Scandinavian and Mediterranean ports by Mr. Jansen, a Copenhagen coal merchant, and Mr. Theodore Lahr, of Rotterdam, with money supplied by an Essen capitalist named Hugo Stinnes. The Department of Commerce is satisfied that the steamers, valued at $2,000,000, represented German capital; but Mr. Wagner's company is registered in the State of Delaware, with American officers, which entitles it to American registry. The Bureau has notified Mr. Wagner that if the vessels attempt to engage in European trade they will probably find their way into the Prize Court. Mr. Wagner declared that he knew nothing of Mr. Jansen or Mr. Lahr, and that if German money had been used for the purchase of these ships it would be repaid. Mr. Wagner added that some of the steamers would engage in the South American trade."

There are some elements in the story which make it more credible than the preceding ones. A very large number of German-owned ships have been transferred to the United States apparently with the connivance of the Allies, at least as regards some of the ships in question. But with the publicity given to the present instance it is not clear how far the American Transatlantic Company can use the vessels, assuming, of course, that the message is correct in its assumption of German connections. If the Bureau has notified, as stated, Mr. Wagner of the risks attending the sailing of the ships in European waters, then there is strong presumption in favour of the story and some interesting developments may be awaited.

SCOUT CRUISERS.

EXCEPT for their work at the Dardanelles, British battleships have not yet been in action, and the naval engagements which have taken place have been between ships of other types such as battle cruisers, scout cruisers, and destroyers. In the "blockade" of British ports, submarines have come prominently to the front, but their performances so far give little indication of what their real influence on naval warfare will be. Scout cruisers, on the other hand, have given services which have thoroughly justified their construction and have proved to be of great value.

The scout cruiser was first proposed by Vice-Admiral Fitzgerald, who gave a paper before the Institution of Naval Architects in 1901 on "A Design for a Fast Scout." He himself was responsible for the general idea, but Sir Philip Watts worked out the design. It was proposed that the vessel should be 400 ft. in length and of 3,800 tons displacement. Reciprocating machinery of 17,000 i.h.p., capable of driving the vessel at a speed of 25 knots, was proposed. Six 4-in. guns and 12 machine guns were to be mounted, and protection afforded by a light protected deck. A radius of action at full speed of 1,500 miles was contemplated, which could be increased to 8,500 miles were the speed reduced to 12 knots. The estimated cost was £250,000. It was pointed out that the vessel was not intended to be a ship of war in the ordinary sense of the word. The qualities of high speed and good sea-going abilities were necessary so that an efficient watch could be kept on the movements of an enemy's ship, and word could be sent to the main fleet from these scouting craft. At that time an almost unanimous opinion existed amongst naval officers that efficient scouting would be of the highest importance in naval warfare, but there was a wide diversity of opinion as to what class and size of vessel would be most suitable for the purpose. Some considered that Atlantic liners would make better scouts than smaller vessels built for the purpose because of their high speeds in all weathers and their great coal capacity. The arguments used against this suggestion were that the vessels made immense targets for either guns or torpedoes, that their machinery was greatly exposed, that they were costly, and that they might be more profitably engaged on other work.

Another school of thought considered that large and powerful armoured cruisers were the proper vessels for scouting. This was on the principle that a reconnaissance to be of any use must be pushed home in spite of opposition, and that no vessel without armour could do this. This argument has been proved to be well founded, for during German manœuvres in the North Sea a year or so ago the light cruisers were unable to break through the cordon of surrounding light craft which protected the main fleet, and were thus unable to ascertain with accuracy the strength of the squadron. The majority of naval experts, however, favoured the construction of light cruisers for this particular work. The qualities which were considered necessary for the ships were:—(1) Sufficient speed to run down the fastest destroyer, except in absolutely calm water; (2) an armament against which no destroyer built or building can stand; (3) protection along the sides to keep out the shells of any guns yet mounted in destroyers, and, except at close range, proof against the 6-in. gun; and (4) a displacement large enough to enable them to keep the sea long after stress of weather had driven the largest destroyers into shelter.

The many and varied types of scout cruisers afloat, are the solutions which have been given at different times by naval constructors to the problem of fulfilling the above requirements. In the first type produced a speed of 25 knots was considered sufficient, and the heaviest guns mounted were only 12-prs.; besides, no side protection was afforded. The advent of turbine machinery made possible the attainment of higher speeds and economy in machinery weights. It was also early recognised that heavier armament was necessary, which caused the 12-prs. to give place to 4-in. guns,

and latterly to 6-in. weapons. At the expense of greater displacement, side armour protection was afforded a succeeding type, which had increased in dimensions, in speed, and in fighting power much beyond the original scouts. The adoption of oil fuel only made possible a remarkable departure in design, and vessels admirably suited for the purposes of scouting have been built which are recognised as being the fastest, best protected, and best armed ships of their size afloat. These vessels could not have been built on a coal-burning basis. Had it been impossible to use oil fuel only they would either have had to be increased greatly in length and consequently in displacement, in which case they would be too expensive for the numbers and service required, or else they would lose considerably in speed and consequently be quite unfit for the tactical duties for which they were designed. It has thus been made possible to incorporate in vessels of very moderate displacement qualities which were not possessed by those preceding, which were 50 per cent. larger.

In order to attain the high speeds which are essential for efficient scouting these light cruisers have been made very long for their displacements. A full merchant ship of 450 ft. in length would have a displacement of about 14,000 tons; in the scout cruisers, on the other hand, this length is associated with a displacement of about 4,000 tons. It has been demonstrated by experiment that the resistance of ships increases rapidly within certain limits of speed-length ratios. The great length of these vessels is necessary to enable them to attain their high speeds and yet be safe from the region wherein abnormal resistance is encountered. As an illustration of the influence of length on the performances of this class of ship a scout of 4,000 tons displacement of 300 ft. in length would require 100,000 h.p. for a speed of 30 knots, were the length increased to 400 ft. and the same displacement held to the power required would be about 70,000, and were the length still further increased to 500 ft. the power would be still further reduced to 30,000. It is thus evident that a great ratio of length to displacement is required for economy in power, but other important considerations have also to be taken into account which have a determining influence on the design. The questions of strength, stability, armament, protection, and radius of action are considered, and weights of structure, machinery, fuel, and stores are balanced, and ultimately the design is determined from the compromise which best suits all the necessities of the case.

Since the appearance of the first vessels of the scout class they have been improved in speed, in power of armament, and in seaworthiness. It is difficult to prophesy what the future development will be, but it has been suggested that speed will be the great feature and that they will evolve into large destroyers capable of steaming 40 knots. The experience of the authorities with the large destroyer, the *Swift*, was such that it is not probable that destroyers of big dimensions and great displacement will be constructed. Any advance on the speeds at present attainable by scouts will only be reached gradually, and will depend to a large extent on the advance of marine engineering, which has in the past 10 years enabled an increase in speed of 4 knots to be obtained. It cannot be expected that another revolutionising power such as the steam turbine will appear to enable the obtaining of greater power with less weight of machinery, but it is by no means evident that the limits of the possibilities of turbine machinery and watertube boilers have been reached.

Rhine Shipping During the War. In declaring no dividend for 1914 (5 per cent. in 1913) the Badische A.G. fur Rheinschiffahrt u. Seetransport in Mannheim states that it had 16 boats in Antwerp and 3 in Basel at the beginning of the war. Those in Antwerp were idle till the end of the year and those in Basel till September. Traffic with Dutch ports, which in conjunction with that to and from Antwerp formed a large portion of the company's business, is almost entirely suspended. Extensive wharves and warehouses are consequently affected. It is hoped that standing charges may be considerably reduced by careful organisation and that receipts will not suffer further decrease.

TRANSMISSION OF HEAT IN MARINE FEED WATER HEATERS.

WE have already briefly referred to the paper entitled "Heat Transmission and Tube Lengths in Feed Water Heaters," contributed by Mr. Leo Loeb, Professor of Marine Engineering at the United States Naval Academy, to the "Journal of the American Society of Naval Engineers." This is a highly valuable contribution to the subject with which it deals, and the paper itself is freely interpolated with diagrams and charts of various descriptions which go far to elucidate the results of the tests on which the paper is based. The main purpose is that of developing the theory of heat transmission as applied to closed heaters operating on exhaust steam and to apply this theory, with reliable data from tests of marine feed heaters, to the preparation of design curves incorporating all the operating variables for a given type of heater. The results from practice naturally show less departure from the theoretical deduction than with other heat transfer apparatus, inasmuch as there is an absence of soot or scale deposit which require frequent interruptions in the case of boiler and evaporator researches and freedom from difficulties arising from the presence of air in large volume at the pressures dealt with in experiments on condensers. Given the necessary mechanical equipment, tests may without great difficulty be conducted to determine the effect of velocity, exhaust steam pressure or initial temperature as desired, since the problem resolves itself into a matter of the direct transfer of heat between condensing steam and water without as a rule the disturbing elements of scale or air.

The general test results were originally based on logarithmic mean temperature difference, and these are cited in the paper as showing the characteristics in the same degree as the exponential temperature difference. The object of one series of tests was to determine the effect on heat transfer of a number of variables, as follows:—

(1) Velocity of feed water through the water film;
(2) Steam pressure;
(3) Temperature of inlet feed;
(4) Variation in mean film thickness;
(5) Vertical and horizontal installation.

The relation between vertical and horizontal heaters having the same film thickness was given a full amount of consideration. At 500 lb. of water per unit of surface the horizontal heater tested showed rates of heat transmission of 720 British thermal units per hour per degree temperature difference as against 910 British thermal units for the vertical heater, an advantage of 26·4 per cent. in favour of vertical installation. Care was taken to give the horizontal heater sufficient pitch to cause the water of condensation to flow freely from the tubes. This did not entirely accomplish the desired result, as the weights of condensed steam for the several intervals of any one test varied between wide limits, whereas in the vertical heater these qualities remained remarkably constant. However, the great difference between the performance of the horizontal and vertical heater cannot be entirely accounted for by the accumulation of water of condensation in the lower part of the corrugations of the inner tube, such as would render partly inactive less than 5 per cent. of the total surface. A reason is, however, to be found in the accumulation of air in the steam space. Air at a given pressure has a greater density than steam at the same pressure and corresponding temperature of saturation. Hence the air will accumulate over collected water, and the usual precautions of blowing through cocks in the covers would be ineffective with such an installation. The presence of this air would actively reduce the transmitting surface, and this, taken with the irregular flow of water of condensation, would explain the variation. In a subsequent test a more efficient disposal of air, attendant, however, with considerable loss of steam, resulted in rates of heat transmission of about 5 per cent. less for horizontal than for vertical installation.

There is a noticeable lack of uniformity between the friction

losses for high and low rates of flow with [illegible] film vertical heater, and between the results with vertical and horizontal heater, [illegible] m. dia. With [illegible] the clearances cannot be considered to [illegible] in any degree of these. Friction is altered by simply [illegible] steam in a coil heater, hence the clearances and adjustments of the tubes are altered materially by the action of heat as well as by possible [illegible] or width when the apparatus is assembled after cleaning.

The [illegible] on the other hand, gives uniform values of friction [illegible] with varying temperature heats, and possesses the further great advantage of replacement of tubes without danger of change in adjustment sufficient to modify the nominal film thickness. The greater uniformity in heat transfers with this film over the $\frac{5}{64}$-in. film is likely due to the same cause. Uniform film means uniform agitation and ability to reproduce results, whereas variations in clearance produce temporary obstructions which increase agitation and hence modify heat transfer.

PUBLICATIONS RECEIVED.

[*A short notice of any publication does not necessarily preclude the subsequent appearance of a longer review.*]

Valves and Valve Gears. Vol. I. By Franklin De Rondo Furman, M.E., 1915. New York: John Wiley & Sons (Inc.). London: Chapman & Hall, Ltd., 11, Henrietta Street, Covent Garden, W.C. 9¼ in. × 6 in. × 1 in. pp. 253. Cloth, price 10s. 6d. net.

This treatise on valves and valve gears is one of the most comprehensive of its kind, inasmuch as it covers the complete range of gears as applied to steam engines and turbines, and in a second volume those adapted to petrol, gas and oil engines. Volume I commences with an elementary study of valve actions, and here the reader is introduced to the principle on which a simple slide valve within a steam cylinder works. The names of the parts are given and the various diagrams show clearly and collectively the operations of the valve and the gear by which it is actuated. Further on in the same chapter the reader is taken wider afield and is shown diagrammatically and in the text how to set out valve gears and details and by the time he has thoroughly absorbed the contents of Section 1 his mind is, or should be, well prepared to pass on to a study of Section 2, which deals with valve diagrams for steam engines.

Section 3 treats, under the heading of "Fundamental Valve Forms," with the essential portions of the mechanism, and deals also with the effect of friction due to pressure on the back of a plain D-valve. After this the work proceeds in the course of five other sections with the following aspects of its subject-matter, namely :—"Fundamental Valve Gear Mechanisms," "Practical Types of Valves for Reciprocating Steam Engines," "Eccentrics and Shaft Governors for Steam Engines," "Practical Steam Engine Valve Gears," and, finally, in Section 8, "Steam Turbine Valve Gears." This last-named section is, if anything, of more than usual interest, inasmuch as it deals with one of the lesser-known aspects of valve design and action. The work is characterised throughout by facility of expression and the excellence of the drawings by which the text is accompanied. It is impossible in a book of this description to avoid a somewhat copious reiteration of index letters in the text, but inasmuch as a study of the subject must necessarily be conducted in conjunction with and by the aid of a large number of lettered drawings this feature, though perhaps somewhat of a disadvantage in a work permitting of continuous reading, is by no means such in a case like the present where reference has to be made with considerable frequency to the drawings.

We shall hope, later, to refer in our columns to Volume II, which deals, as already stated, with valves and valve gears of petrol, gas and oil engines.

South Wales Wireless Training College.—The prospectus of the South Wales Wireless Training College, which is situated at St. Mary's Street, Cardiff, contains particulars concerning a branch of mercantile shipping which has become increasingly important during recent years. This institution is claimed to be the only training college for wireless telegraphy in South Wales fitted with the Marconi Company's installation.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by Correspondents.*]

DESIGN OF TRAMP STEAMERS.

17, Battery Place,
New York, U.S.A.,
July 23.

To the Editor of Shipbuilding and Shipping Record.

In your issue of June 17, I was much interested in the paragraph relating to the design of tramp steamers, and particularly to that sentence wherein you noted the desire for greater ratio of dead-weight to displacement having brought about many improvements in design and construction.

For some years I have given much consideration in preparing designs to the very point to which you have directed attention, and believe that it would be interesting were some of your contributors to state the minimum ratio which they have attained in recent English cargo boats. In some of the instances which have come under my personal observation of British vessels the lowest dead-weight ratio to displacement has been 1·375, and in the case of the steamships *Atlantic* and *Pacific* illustrated in your journal some months ago and designed by the writer, it may be interesting to note that on the equivalent draught to the assigned British Board of Trade freeboard the ratio of deadweight to displacement was 1·355. Possibly some of your shipbuilding contributors will be good enough to state what minimum has been reached in their particular experience. It may be added that the vessels to which I have referred were single-deck bulk cargo carriers constructed to the highest class in Lloyd's Register.

G. SIMPSON.

H.M.S. "WORCESTER."

Sir T. Sutherland's Inspiring Address.

Shorn though it was, thanks to the war, of some of its most pleasing features, the annual prize-day, held last Thursday on board H.M.S. *Worcester*, moored off Greenhithe, was yet in every way a success. This year there was no general invitation to the parents and friends of the cadets; the cadets did not man the yards; and the gallant old ship was not dressed with bunting. She flew the red, the white, and the blue ensigns only, and with so little in the way of colour one was, perhaps, the better able to appreciate the smart, trim appearance of the vessel. "Shipshape and Bristol fashion" is certainly the order of the day on board the *Worcester*, and Captain Wilson Barker, her captain-superintendent, and his officers, are certainly to be congratulated on the fine condition in which the ship is kept.

Sir Thomas Sutherland, Chairman of the Worcester Committee, accompanied by Lady Sutherland, went down to the ship by motor car. The others attending were Mr. E. Norton, Mr. G. L. King (New Zealand Shipping Company), and Mr. F. H. Stafford (the Secretary).

A Splendid Record.

Sir Thomas Sutherland, addressing the cadets who were assembled on the main deck, said that even the youngest of them might possibly be aware that at the present moment this country was face to face with the greatest crisis in its whole history. Many of the *Worcester* cadets might soon be called upon to stand up for the defence of their country, and to assist in winning the victory which must be achieved. He was sure, in the case of the *Worcester*, there would be no shirkers. The ship's record was a very good one, for at the present time between 400 and 500 old "Worcesters" were serving their King, either ashore or afloat.

Germany, as they knew, had forced this war upon Great Britain. The enemy's immediate aim was to dominate Belgium, and particularly to monopolise Antwerp's great trade, a result which would

certainly have been followed by the downfall of Belgium, and not long afterwards by the downfall of Holland. Germany could not afford, once in control of the trade of Belgium, to allow Holland to remain as her rival. But the great aim of Germany was to ruin France, to seize her Mediterranean colonies, and to make Germany a great Mediterranean Power. This would have been the era of world domination which German soldiers and German professors had been prophesying for many years. Had the enemy succeeded in his ambition, he felt sure that this country would have been the next victim of Germany's jealousy and aims.

Sir John Jellicoe's Chance.

If this country had no adequate army when this unexpected war occurred, they could thank God for an adequate navy, a navy which had kept Germany's great battleships immured. The seas of the world had been kept open for our merchant ships by the British Navy. Sir John Jellicoe could only keep watch and ward in the northern seas, because the enemy refused to come out, but he believed Admiral Jellicoe's chance would yet come. Meanwhile the country hardly suffered in its commerce from the submarine warfare carried on against it by the enemy. The cold-blooded sinking of the *Lusitania* was a crime which he ventured to say Germany would yet repent bitterly, and pay for heavily.

He congratulated very cordially the commander, the masters, and the officers of the *Worcester*, and the cadets themselves, upon a very successful year's work. The whole tenor and bearing of the reports upon the work of the cadets were altogether satisfactory.

The prize list was, as usual, a very lengthy one. The King's gold medal, given annually to the boy who shows the qualities likely to make the finest sailor, was awarded to Charles Aubrey Long. The sextant presented by the Elder Brethren of Trinity House to the boy who obtains the gold medal was also handed to Long, and a similar sextant, also from Trinity House, was awarded to R. W. Hurt for seamanship. The gold watch given by the P. & O. Company to the boy second in the Gold Medal Competition was also won by Hurt.

Prizemen.

The cadet scholarship presented by Messrs. Devitt & Moore went to J. J. Craig. For efficiency in executive duties J. H. Lewty was awarded the sextant presented by the Orient Line. R. W. Hurt was the winner of the prism binoculars given by the British India Steam Navigation Company for knowledge of the rules of the road. The binoculars presented by the Royal Mail Steam Packet Company for signals fell to T. A. R. Muir. The silver cup presented by Lady Sutherland for the best swimmer was won by V. D. H. Bidwell.

Captain D. Wilson Barker proposed a vote of thanks to Sir Thomas and Lady Sutherland, and Cadet C. A. Long seconded the proposal.

Sir Thomas Sutherland, in reply, said his association with the *Worcester* went back to 1873 or 1874, when he became a prominent member of the P. & O. Company. It then became his duty to inquire minutely as to the character of officers when their cases were put before him for promotion, and he well remembered how, in regard to some officers, the answer he got to his inquiries was: "Mr. So-and-So is an excellent officer. He is a *Worcester* boy."

German Shipbuilding in East Africa.—According to *Vorwärts*, the steamer *Götzen* was launched successfully at Kigoma on Lake Tanganyika in February last. This is the first of three large vessels to be built for service in connection with the Tanganyika–Dar-es-Salam Railway. The second steamer *Rechenberg* is building in the Jos. L. Meyer (Papenburg) yard. The launch of the *Götzen* was accomplished despite the lack of important appliances, delivery of which was interrupted by the war, "and it is hoped that the vessel will soon be completed." The vessel is 226 by 33 ft. and draws 7 ft. 6 in. with 480 tons lading. In conjunction with the two small steamers *Hedwig von Wissmann* and *Kingani* (formerly used as Customs cruisers on the East African coast and taken up by rail on the outbreak of war), the *Götzen* is of some military importance in commanding the 950 miles of lake shore. Enemy vessels on the lake are said to have been destroyed!

CLYDE SHIPYARD WORKERS FINED.

Munitions Tribunal and Fairfield Strike.

One of the most notable tribunals ever held in Glasgow was that which held a sitting for the first time on Monday for the trial of about 30 coppersmiths who, it was alleged, had come out on strike from a Clyde shipyard in contravention of the provisions of the Munitions of War Act, 1915. Mr. W. M. Gloag, K.C., Prof. of Law at Glasgow University, acted as Chairman of the Tribunal, and the assessors to the Court were Mr. James Dalrymple (Manager of Glasgow Corporation Tramways) from the Employers' Panel, and Mr. John Thomsons (Secretary of the Associated Blacksmiths' Society) from the Workmen's Panel. The 30 men were all in the employment of the Fairfield Shipbuilding & Engineering Company, and the complaint against them by the firm was that they "did on July 27, 1915, infringe the provisions of the Munitions of War Act, 1915, in that while in our employment and engaged on munition work, did leave their employment and take part in a strike in contravention of the terms of Section 2 of the Act, and are still on strike." All the accused pleaded not guilty.

Mr. Robert Turnbull, President of the Coppersmiths' Society, speaking on behalf of the men, said the Court had only been constituted since this case came into being. Their Association had had no opportunity of representing the case to the Board of Trade, or whatever other authority it should have been reported to. In their opinion the Fairfield management had violated the Act, although they (the Association) had never had the opportunity of making their report or stating their grievances owing to their not knowing the Court to approach at that time. Therefore they did not know, and still did not even know, whether they could bring legal assistance on their behalf to the tribunal. They therefore asked the Court to discontinue the proceedings until the Association was put in a fair position to defend their members.

The President said they could have discovered by looking at the Act whether they could be represented or not.

After certain other objections by the workers' representatives had been over-ruled by the President, evidence was given by Mr. Alexander Cleghorn, Director and Engineering Manager of the Fairfield Company, as to the circumstances which led the men to leave their work and go on strike. He said they had experienced a shortage of men for some time. The steps taken to remedy that included representations to the Captain-Superintendent of the port and, later, to the Armaments Committee. His firm were particularly short of coppersmiths' labour. They required at least 40 additional coppersmiths, and on May 10 he wrote to the Armaments Committee pointing out their requirements in this respect. Mr. Cleghorn then spoke to correspondence which passed between the firm and the Armaments Committee with regard to a request by him that arrangements might be made to enable the firm to employ plumbers at certain work usually done by coppersmiths. This request was acceded to on July 14. Steps were taken after the holidays, he said, to use plumbers on the classes of work in question. On July 26 it was reported to him that the coppersmiths in the firm's employment were objecting to the arrangement which he had carried out. The works manager explained to them the urgency of the work, but the men left off work, and they were still on strike.

Evidence was also given by Mr. John Stirling, works Manager, and by the firm's foreman coppersmith, as to the employment of the plumbers and the men going on strike.

Mr. Robert Turnbull, in the course of a statement made on behalf of the men, said the committee of the Coppersmiths' Society, after getting the full facts of the case, came to the conclusion that the Fairfield management had violated the Act in the first place. No opportunity had been given to the men for consultation before the action taken by the Fairfield Company. Although the Society was quite willing to relax demarcation rules in regard to plumbers

and other trades, the promiscuous employment of plumbers with coppersmiths would prejudice their position at the end of the war.

The President asked whether the men would agree to refer to the Board of Trade the question as to whether the plumbers were to be introduced and go back to work the following day.

Mr. Turnbull replied: Not if the plumbers are to be promiscuously employed alongside the coppersmiths.

The Court afterwards adjourned so that the men might consider the question of arbitration.

On resuming, the men's secretary made a statement agreeing to advise the men to return to work if the *status quo* was maintained pending a settlement.

The President announced that he was authorised by the Fairfield Company to state that, while, as he read the Act, the firm would be entitled to continue to employ the plumbers until a settlement by the Board of Trade, they were willing as a concession, not to employ them on the disputed work until the Board of Trade settled the matter. Addressing the men, the President said, that in view of the offer of their officials to advise a return to work—which he presumed the men would accept—he thought justice would be met by imposing a fine of 2s. 6d. each.

After some further discussion of the terms on which the men would return to work, Mr. Cleghorn said that, in addition to the concession made by the firm not to employ plumbers on disputed work in the shop, for every coppersmith supplied by the men's Union, who was capable of working steel pipes, the firm would (pending the Board of Trade arbitration) take a plumber off the work on board ship.

The Union officials intimated that the Union would pay the men's fines.

ALIEN SEAMEN—NEW ORDER.

An Order in Council has been issued amending the Aliens Restriction (Consolidation) Order, 1914 (referred to as the Principal Order), and relates to alien seamen. The regulation cited as the Aliens Restriction (Seamen) Order, 1915, states:—

"1. (1) An alien, being the master or a member of the crew of a vessel arriving at any port to which this article is applied by order of the Secretary of State, shall not land at that port unless he has in his possession a passport issued to him not more than two years previously by or on behalf of the Government of the country of which he is a subject or a citizen, or some other document satisfactorily establishing his nationality or identity, to which passport or document there must be attached a photograph of the alien to whom it relates.

"(2) Where an alien is under the provisions of this article prohibited from landing at any port, an aliens officer at that port may nevertheless grant him temporary permission to land for such purposes and subject to such conditions as the Secretary of State may from time to time prescribe, either generally or as respects any particular port or vessel.

"(3) This article shall have effect as if it were contained in Part I of the Principal Order, and that Order shall have effect accordingly.

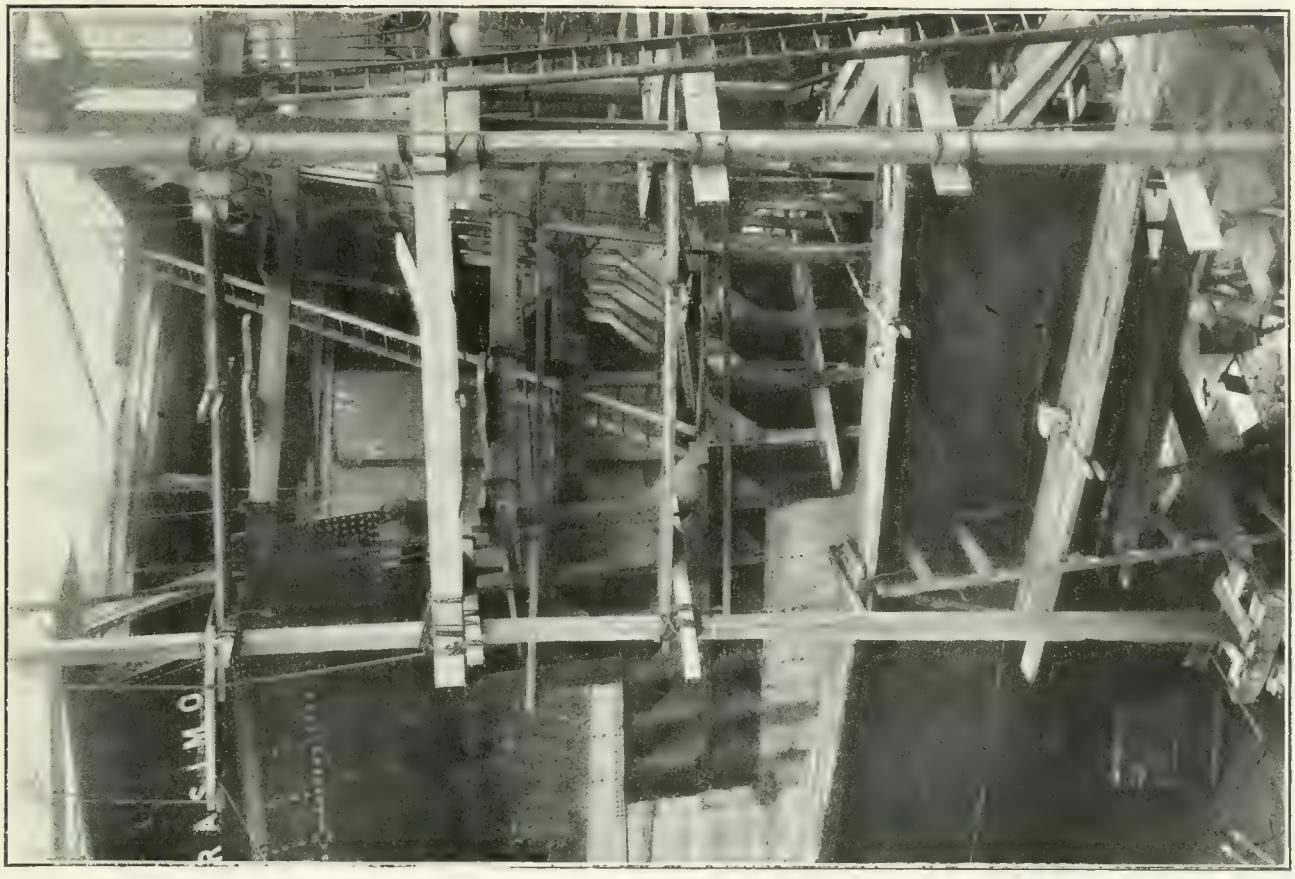
"2. (1) Where a vessel remains for 24 hours or more at any port to which this article is applied by order of the Secretary of State, an alien, being the master or a member of the crew of the vessel, shall for the purposes of Article 19 of the Principal Order be deemed to be residing in the area in which the port is situate, and shall accordingly comply with the requirements of that article as to registration; and where the alien is a member of the crew, the master of the vessel shall, as soon as may be, give notice of his presence on board the vessel to the registration officer.

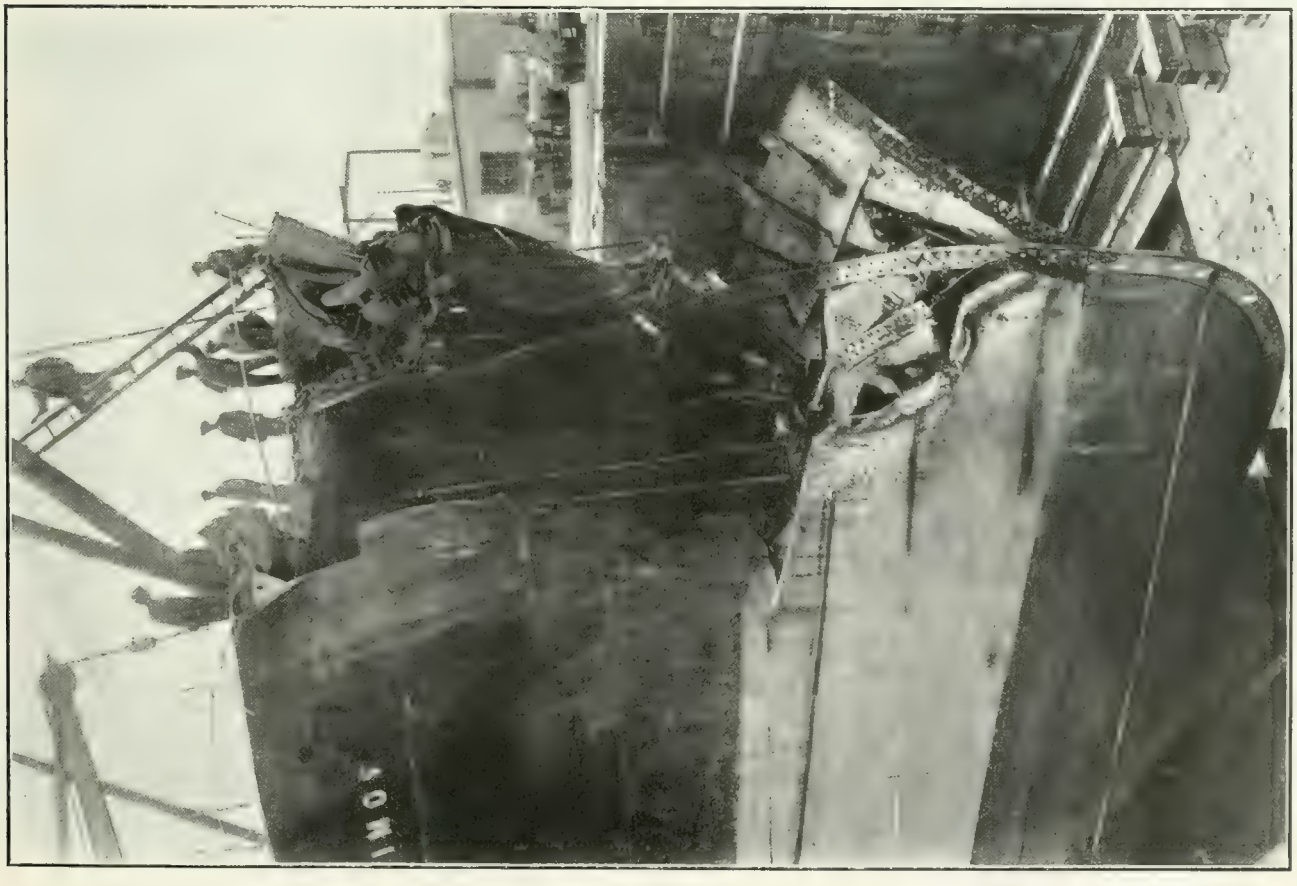
"(2) This article shall have effect as if it were included in Part II of the Principal Order, and that Order shall have effect accordingly.

"3. The provisions of this Order shall be in addition to and not in derogation of any other provisions imposing duties or restrictions on aliens or conferring powers on aliens officers."

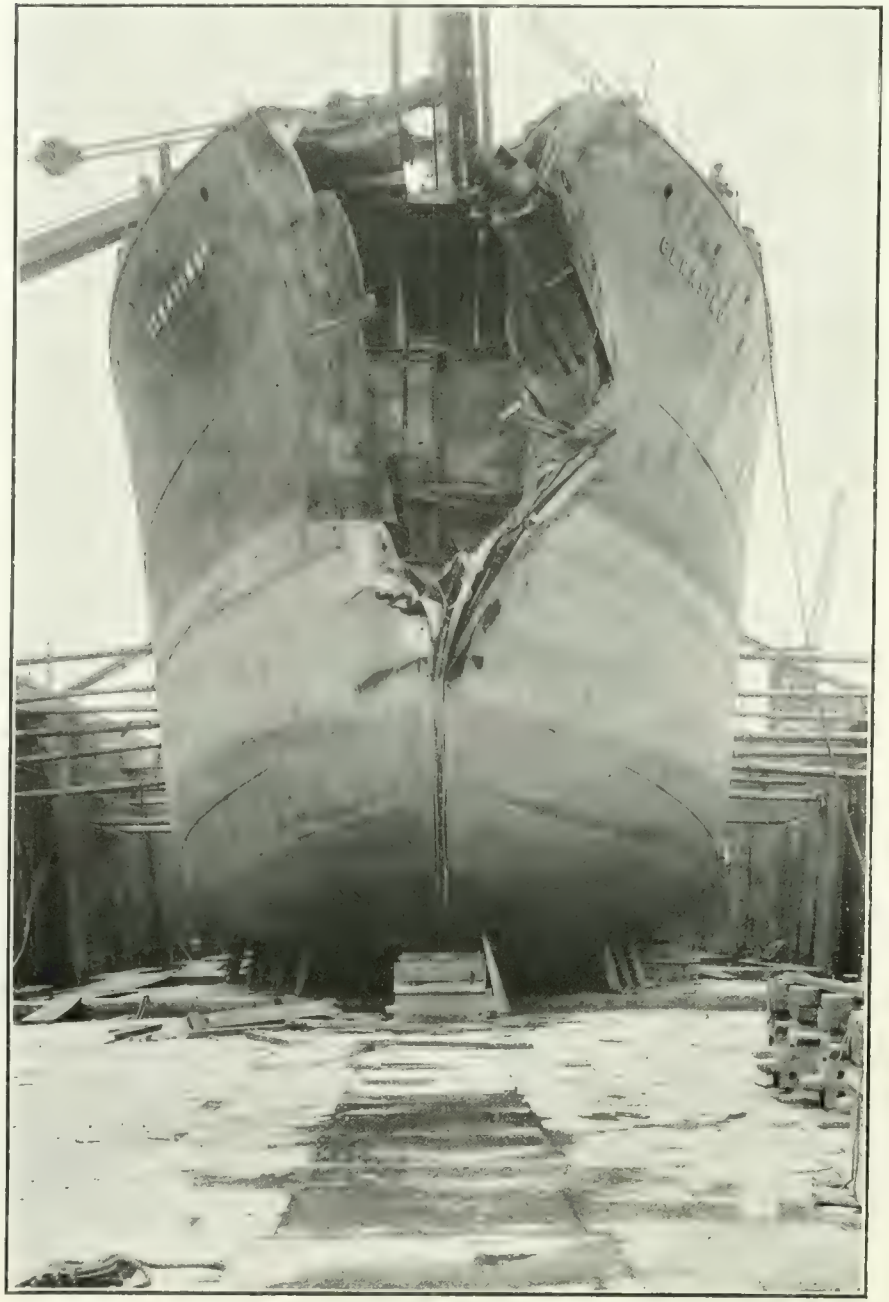
"GERASIMOS" - "THEOFANO SIDERIDES" COLLISION DAMAGE.

The collision of the Greek steamers *Gerasimos* and *Theofano Siderides* is particularly interesting, inasmuch as the vessels came into contact with each other at sea being in the English Channel about 60 or 70 miles to the southward of the Wolf Rock. On pages 109–11 we reproduce photographs showing the extensive bow damage sustained by both vessels. The collision occurred late in the morning of June 13 last, in thick weather. The *Gerasimos*, which is a steel screw steamer of 3,845 gross register and 2,379 net register, was built by Messrs. Napier & Miller, Ltd., and launched at Glasgow in June, 1913. She is owned by Messrs. N. D. Lykiardopulos & Co., Argostoli, Greece, and was bound from Cardiff to Marseilles with a cargo of 6,000 tons of coal. The *Theofano Siderides* is a steel screw steamer of 2,501 gross register and 1,586 net register, built by Messrs. Gourlay Bros. & Co., and launched at Dundee in October, 1895. She is owned by Mr. M. Livanos, Chios, Greece and was on passage from Genoa to Barry in ballast. The force of the impact when the vessels met is illustrated by the fact that the steamers were locked together for two hours and were drifting in the Bay of Biscay before they succeeded in breaking away. The *Gerasimos* then made for Brest, where she arrived and after discharging about 650 tons of cargo, had temporary repairs effected and sailed for the Bristol Channel. Upon docking at Cardiff she discharged another 350 tons in order to obtain the required draught for dry docking. The *Gerasimos* was placed in the hands of the Bute Shipbuilding & Engineering Company, Ltd., Cardiff, and the *Theofano Siderides* in the care of the Mercantile Pontoon Company, Ltd., Cardiff, both of which concerns are subsidiary undertakings of the Cardiff Channel Dry Docks and Pontoon Company, Ltd. The *Gerasimos* was dry-docked with 5,000 tons of her cargo on board and it was found that her stem was fractured and distorted and that the stem plating was buckled, bent and broken to such an extent that it presented a mass of twisted steel. The bows were crushed back about 16 ft., but the bulkhead was not materially damaged except that a few rivets were started. The repairs, which are estimated to take about six weeks, and were commenced on July 7 last, include the renewal of about 27 shell plates, a large number of forecastle and main deck plates, and the forepeak tank-top besides the replacing of beams and frames. The *Theofano Siderides* had her stem broken in several places and her bow was also crushed back approximately 16 ft., while the fore-end of the ship to abaft the collision bulkhead was a crumbled mass of plates, frames, stringers, beams and stanchions. The collision bulkhead itself was set back to the extent of about 18 in. and was pierced by portions of the steamer *Gerasimos*, which remained embedded in the bulkhead thus showing the force of the impact when the vessels met. Even stringers in the No. 1 hold, about 10 ft. abaft of the collision bulkhead, were distorted. The repairing of the *Theofano Siderides* was commenced on June 17 last and will take about two and a half months to complete, approximately, 55 bow plates and the stem bar having to be renewed while the whole of the collision bulkhead will be taken down and the pierced plates refitted. A large number of beams, frames and stringers also will have to be renewed. Both jobs are of an extensive nature and rank amongst the biggest jobs of their kind dealt with in South Wales. Messrs. Fergusson & Law, Cardiff, consulting engineers and marine surveyors are acting for the owners of both vessels.

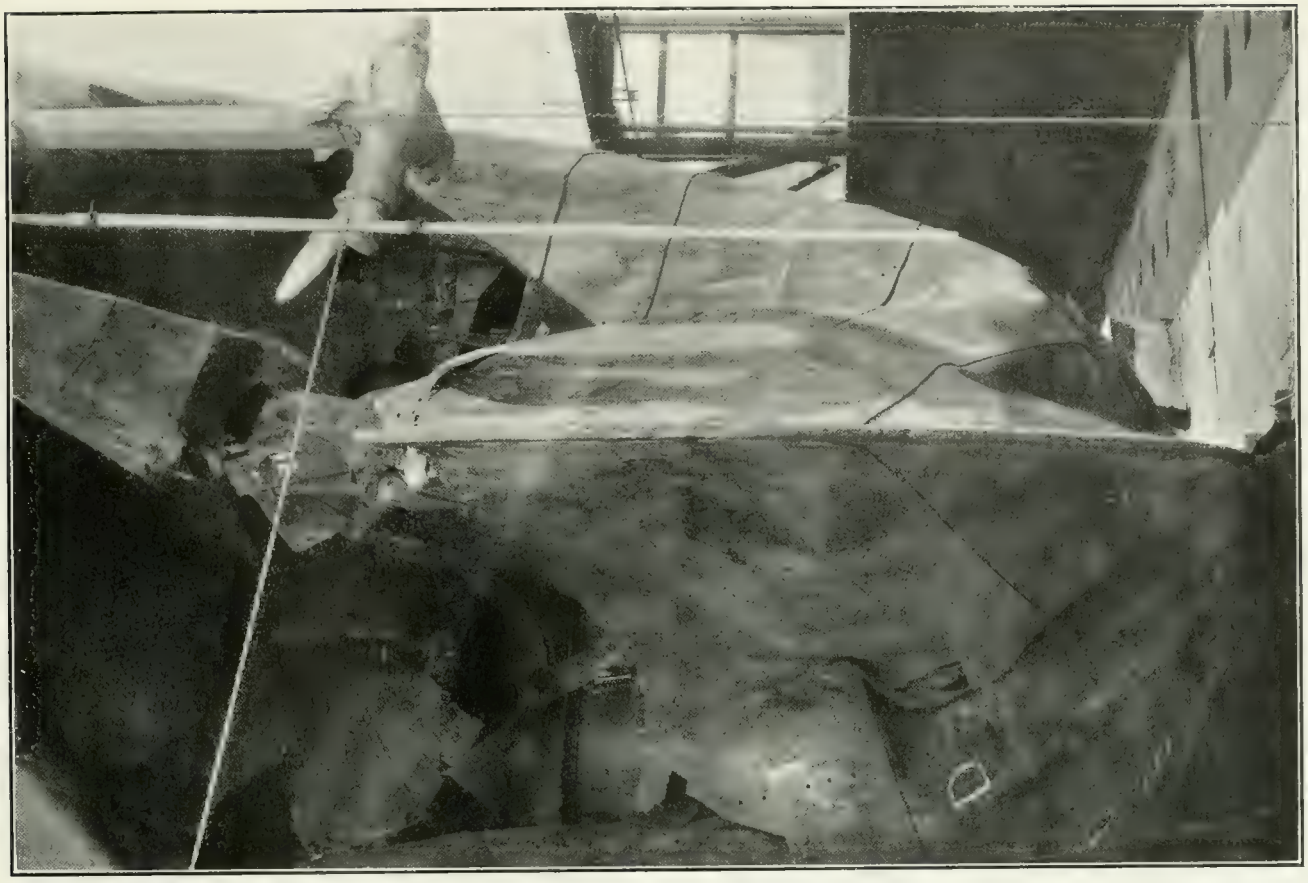




Starboard Bow of the SS. "Gerasimos," which collided with the "Theofano Siderides," Showing Damage and Subsequent Repairing Operations.



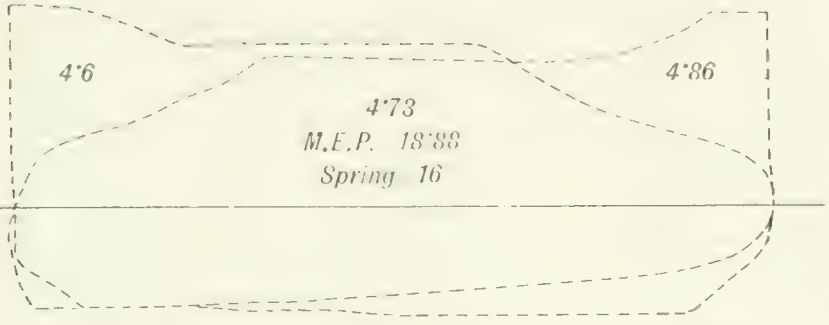
SS. "Gerasimos." Views showing Bow Ripped Open and Extent of the Damage on Port Side. Repairers: The Bute Shipbuilding & Engineering Co., Ltd., Cardiff.



SS. "Theofano Siderides." View of the Starboard Bow and View showing Distortion of the Stem Bar. Repairers: Mercantile Pontoon Co., Ltd., Cardiff.

TRIAL DATA OF THE "TAVERNILLA" AND "GORGONA."

In our issue of June 10 last were published drawings and a description of the two tugs which the Panama Canal authorities have recently had built. We have received from the designer of the tugs (Mr. M. C. Furstenau, Philadelphia, Pa.) the accompanying diagrams, which show the results obtained from the machinery during the respective trials of the *Tavernilla* and *Gorgona*, the two tugs in question. The vessels were also built under the supervision of Mr. Furstenau.



Card No. 1
March 11 [illegible]
Vacuum 25
Rev. M.E.P. [illegible]
I.H.P. High pressure cyl. [illegible]
Low pressure [illegible] 565
Total 1,254
[illegible] gross tons
13 ft. 11½ in.
12·87 knots.

NEW SURVEYING VESSEL FOR THE U.S.A.

Plans and specifications have been sent out by the authorities for the new vessel for the United States coast and godetic survey. The vessel is to be named *Surveyor*, and is to be employed in the waters round Alaska coast. The vessel is to have the following dimensions:—

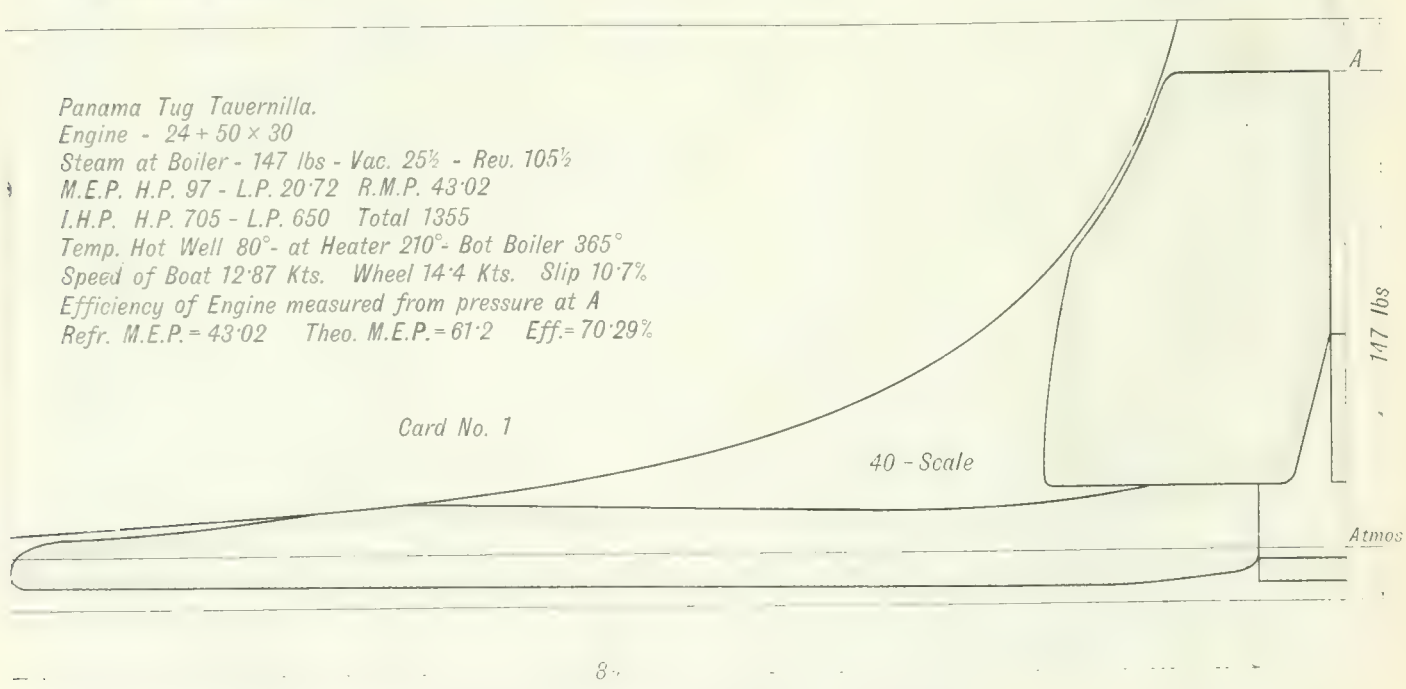
Length, o.a.	186 ft.
Breadth	34 ft.
Depth	20 ft. 6 in.
Draught, loaded ...	11 ft. 6 in.
Tonnage	800 gross.
Displacement	1,000 tons.

Triple-expansion engines of about 1,000 i.h.p. will be installed for a speed of 12 knots.

The fuel will consist of crude oil, and arrangements have been made for carrying about 230 tons of this. The steaming radius is to be 8,000 miles.

The boat equipment includes two 28-ft. steam launches, two 24-ft. power whaleboats, a 28-ft. whaleboat, a 28-ft. cutter, and four small boats. Electric lighting and refrigerating plant are to be supplied, as is also a wireless apparatus with a radius of 300 miles.

The tenders only call for the construction of the hull, machinery and such equipment as is common to first-class merchant marine vessels of similar type. The remaining equipment peculiar to surveying vessels will be obtained or constructed under separate specifications.


Theo. Cut.
·579
·531
A
147 lbs
Atmos
Panama Tug Tavernilla.
Engine - 24 + 50 × 30
Steam at Boiler - 147 lbs - Vac. 25½ - Rev. 105½
M.E.P. H.P. 97 - L.P. 20·72 R.M.P. 43·02
I.H.P. H.P. 705 - L.P. 650 Total 1355
Temp. Hot Well 80°- at Heater 210°- Bot Boiler 365°
Speed of Boat 12·87 Kts. Wheel 14·4 Kts. Slip 10·7%
Efficiency of Engine measured from pressure at A
Refr. M.E.P. = 43·02 Theo. M.E.P. = 61·2 Eff. = 70·29%
Card No. 1
40 - Scale
Efficiency Calculated from Theo. Cut. = 69·3%

GENERAL NEWS SECTION.

PERSONAL.

Captain George Graves, for 40 years Harbour Master of Dublin, died recently. He retired from office a year ago owing to failing health.

Geh. Baurat Baur, Chairman of Directors of the Germaniawerft in Kiel, has been summoned to Essen in connection with the preparation of a special report, and has also been made a director of Krupp's Gussstahlfabrik.

Sub-Lieut. Ronald Worthington Jukes, of the Collingwood Battalion, Royal Naval Division, whose death is reported from the Dardanelles, was formerly in the merchant service. He received his training on the *Worcester*.

Sir Percy Girouard, who recently resigned his position as one of the managing directors of Sir W. G. Armstrong, Whitworth & Co., Ltd., to undertake special duties in connection with the Ministry of Munitions, has, on the completion of these duties, now resumed his position with the Elswick firm.

Lieut. J. L. Rowan, of the 5th Argyll and Sutherland Highlanders (T.F.), whose death is announced, was at one time an engineer in the service of the P. & O. Company. He was the son of Mr. John Rowan, of Dardenne, Kilmacolm, and received his education at Greenock, and subsequently at the Glasgow Technical College.

Captain J. W. Palmer, Cardiff, has been presented at Cardiff with a gold watch and cheque for his services in saving the steamer *Blue Jacket* (now *Tynemede*) after she had been torpedoed by a German submarine. The London group of the War Risk Association, in conjunction with the owner of the steamer (Mr. George Hallett, Cardiff) subscribed for the gifts, which were handed to Captain Palmer by Mr. John Cory, Chairman of the Cardiff and Bristol Channel Shipowners' Association.

The P. & O. Company announce the following appointments:—Mr. W. E. L. Murray has been appointed to act temporarily as Agent at Aden. Mr. P. L. Knight has taken temporary charge of the company's Calcutta agency. Messrs. Smith, Mackenzie & Co. have been appointed Agents at Mombasa and Zanzibar, where they already had charge of the interests of the British India Steam Navigation Company. Messrs. Francis Peek & Co. have been appointed to represent the P. & O. Company at Soekaboemi (Java), and at Vladivostock Messrs. O. W. Lindholm & Co. have been appointed.

The death occurred suddenly last week at his residence, 25, St. Augustine's Avenue, Croydon, of Mr. Alfred Henry Houlder. Mr. Houlder was the son of the late Mr. Alfred Houlder, and brother of Mr. Howard Houlder. He was a director of Messrs. Houlder Bros. & Co. until 1908, when he retired and, joining his brother, Mr. Howard Houlder, became a director of Messrs. Houlder, Middleton & Co. It appears that the late Mr. Houlder was in the City as usual on Thursday of last week. On the Friday he took a walk before breakfast, and on returning home had an apoplectic seizure and died within an hour. He was in his 59th year.

A presentation was recently made of a gold watch and inscribed silver salver to Mr. W. E. Grayburn, for 33 years Resident Manager of the Aire & Calder Navigation Company at Goole, who is retiring from commercial life. Mr. G. W. Winterbottom, Steamship Manager of the Lancashire & Yorkshire Railway Company, presided, and referred to Mr. Grayburn's long services with the Navigation Company and with the Humber Conservancy. Mr. Grayburn had also had a long service on the Goole Urban Council, of which body he had been Chairman. In his reply, Mr. Grayburn mentioned that when he went to Goole the largest ships sailing up to the port were of up to 600 tons, while now ships of over 2,000 tons came regularly to Goole.

Word has just been received in Rugby that one of the first volunteers to enlist from the British Thomson-Houston Company has been decorated with a Distinguished Conduct Medal. This medal was awarded to Private A. Hotz, of the 1st East Surrey Regiment, for conspicuous gallantry on Hill 60 when he placed himself in front of a communication trench occupied by the enemy, and, on the enemy advancing, attacked them with hand grenades and dispersed them. Before the war, Mr. Hotz was employed in the construction department of the British Thomson-Houston Company, Ltd., and the members of the British Thomson-Houston staff are naturally very much pleased with the winning of this reward for gallantry by one of their number.

FROM OUR CORRESPONDENTS.

CLYDE AND DISTRICT.

(From Our Own Correspondent.)

Glasgow.

There were very few mercantile vessels launched on the Clyde during the past month, the total output being only about 15,630 tons, or 3,000 tons less than that of the preceding month. This total is made up of three vessels, one of which is a liner of 15,000 tons, while the other two are a small steamer and a tug, of 230 and 400 tons respectively. For the seven months of the present year the total output consists of 53 vessels of 154,600 tons, which shows a falling-off of about 129,300 tons when compared with the first seven months of last year. The comparison is interesting from the fact that the past seven months are being compared with the period which immediately preceded the outbreak of the war. No mercantile orders were reported to have been placed during the past month, but the yards do not lack work on that account. In fact, the main difficulty with which shipbuilders are faced is a shortage of skilled workers.

The month's returns include the twin-screw passenger and mail steamer *Aotearoa*, which the Fairfield Shipbuilding & Engineering Company have launched for the Union Steamship Company of New Zealand. As in the case of several other large vessels in Clyde shipyards, work on the *Aotearoa* was stopped for a time in order that more urgent contracts might be completed. The contract for the vessels was reported to have been placed in September, 1913, so that the vessel has been the greater part of two years on the stocks. There are now five new vessels fitting out at Glasgow, and in addition there are several at yards on the lower reaches of the river. Among the latter is the new steamer *Basse Indre*, which the Campbeltown Shipbuilding Company have built for the Société Anonyme des Chargeurs de l'Ouest, Nantes. The machinery has been supplied by Messrs. Rankin & Blackmore, Greenock. The *Basse Indre* is almost ready to run trials.

Repair Work on the Clyde.

Messrs. D. & W. Henderson have almost completed the repair of the Anchor liner *California*. Last week she was put into dry dock at Govan for hull cleaning, and the vessel is due to sail from Glasgow for New York on August 21. She has now been considerably more than a year off service, having stranded on Tory Island on June 28, 1914. After being refloated on August 12, she was brought to the Clyde a week or two later. The work of repair was commenced in October last and she occupied one of the Clyde Trust's graving docks from early in November till the end of May last. There are very few other repair jobs on hand at Glasgow, but at Greenock Messrs. James Lamont & Co., have almost completed

the work of overhauling a cruising steamer and also one of the Clyde Shipping Company's tugs.

Pier Extension at Greenock.

The work of extending and widening Princes Pier at Greenock has, up till the present, been unavoidably delayed owing to the difficulty of securing delivery of the necessary material, particularly the steel required for the making of reinforced concrete piles. Delivery has now been obtained of a good deal of material and the work is being pushed forward as quickly as possible by the contractors, Messrs. McEwan & Co., Port Glasgow. A number of the main piles have been driven in front of the existing pier to a depth of about 18 ft., and some sheet piling has also been carried out. It is intended to make at Princes Pier a berth capable of accommodating the largest vessels which come to the Clyde, including Atlantic liners.

MERSEY SHIPPING AND SHIPBUILDING.

(From Our Own Correspondent.)

Liverpool.

Birkenhead munition workers have pledged themselves anew "to deliver the goods," and ostensibly to an easement of Trades Union rules and regulations, which Mr. William Brace, the Under-Secretary of the Home Office, urged upon them as necessary if the war is to be carried to a successful issue.

At this meeting Mr. A. Bigland, M.P., observed that since the war began, Birkenhead had done valiant service to strengthen the Navy. The town had established a record in shipbuilding yards, a fact of which they had every reason to feel proud.

As I indicated last week, the Liverpool steamship companies trading to South Africa have now made their plans for including in their itinerary the new South-West African colony which General Botha has conquered for the Empire. The Ellerman and Harrison service of steamers, which load at Glasgow and Birkenhead for South African ports, will call at Swakopmund and Luderitz Bay, and similar arrangements in respect of these ports have also been made by the Clan Line (Cayzer Irvine & Co.), Ellerman and Bucknall Lines, and also by the Union-Castle Line. The frequency of calls at these ports will obviously depend upon the amount of support which these enterprises receive.

The congestion trouble at the Mersey docks has not improved much during the last fortnight, and the waiting turn is still just over 30 vessels. There are, however, reasons for hoping that before the busy season sets in there will be clear berths for ships as they arrive.

A supplementary statement by the Manchester Ship Canal Company respecting the increased revenue of £32,903 for the half-year ending June 30 last explains that this sum includes £13,000 in respect of Ship Canal tolls on Government cargo, which the Government has not yet agreed to pay. Further, against these increased earnings there are new interest charges amounting to £10,500. Nevertheless, the position of the company shows up well against the position at this time last year, and the busy months of the year have yet to be taken into account.

BELFAST SHIPBUILDING AND SHIPPING.

(From Our Own Correspondent.)

Belfast.

There is not quite so much activity in Belfast shipbuilding at present as for some months prior to the holidays. The number of men unemployed is larger than it has been, and those who are out of work are willing and anxious to place their services at the disposal of the Government. Over 600 carpenters and joiners, ironmoulders and painters who are unemployed held a meeting on the 30th ult. under the presidency of Mr. H. Attwood, of the Ironmoulders' Society, and passed a resolution protesting against the "continued indifference of the Government in ignoring their repeated claims in the manufacture of munitions or other essential work." The resolution also expressed the opinion that it would be more expedient and equitable to engage the unemployed artisans of the country, irrespective of trades, before sending abroad for men or engaging the services of women. It was also decided to bring the matter under the notice of the Prime Minister, the Munitions Minister and the War Office Advisory Committee. There has been some local comment on the fact of so many men being idle when the Government is clamouring for workers. It is a pity, however, those trade union regulations in Belfast, as elsewhere, are interfering with work, as there has been a strike at Queen's Island, the drillers objecting to men of other trades doing work which they perform in normal times.

There are over 300,000 tons of merchant shipping laid down or on order in the Belfast yards, but the difficulty is that the owners do not immediately require the boats in most cases. The percentage of these vessels now being proceeded with is very small, other work requiring more immediate attention. At the moment there are about 160,000 tons of new shipping afloat in the harbour and most of it is lying idle.

Brisk Shipping Traffic.

Traffic at the harbour is brisker at present than it has been for some time, particularly in the foreign, and arrivals from the Plate and elsewhere show a notable increase, and considering the number of overseas cargoes which have reached the port recently, the percentage intercepted by the German submarines has been small, only two boats having been sunk in the past three months. The disastrous fire at the Dufferin Dock sheds last week has not interfered with traffic. The damage amounts to over £30,000, the shed itself, 600 by 40 ft., being destroyed, as well as the contents, which consisted mainly of hay for shipment and thousands of bags of Canadian gift flour awaiting distribution throughout the country. The fire burned for four days and was the largest at the harbour since the Harland & Wolff timber depôt on Queen's Island was destroyed about 20 years ago.

Irish Harbours Association.

An effort is about to be made to bring the Irish Harbours' Association into a more vigorous way of working. Since the hon. secretary, Mr. John Boyd, of Limerick, died there has not been a meeting until a few days ago, when it was decided to invite all harbour authorities in the country to a general gathering to be held in Dublin on August 24, with a view to forwarding the interests of Irish ports and taking joint action when necessary in connection with matters concerning all or any Irish ports. Mr. A. A. Farrell, Secretary to the Waterford Harbour Commissioners, is acting as secretary *pro tem.*

SOUTH WALES NOTES.

(From Our Own Correspondent.)

Cardiff.

Welsh ship-repairers probably have never passed through a more trying period than during the first six months of the current year. Not only had they to cope with a tremendous amount of extra work, but at the same time a shortage of labour had to be contended with on account of many of their workers transferring their services to the naval dockyards, while a large number also enlisted. The difficulties were further enhanced by a dispute between the employers and the fitters, the latter having demanded a rise of no less than 15s. a week, which the masters refused. The men in an attempt to force their demands, decided not to work any overtime, a threat which they carried out for a couple of months and seriously curtailed the output of the shipyards. Ultimately the dispute was settled, the men obtaining an increase of 5s. per week. The rift between the fitters and the employers happened at a most inopportune moment, for South Wales was congested with tonnage under and awaiting repairs; for with the North country yards fully occupied with naval work and the whole of the Belgian, German and North of France shipyards closed to the greater portion of the world's shipping, South Wales was called upon to cope with a large amount of extra work and many vessels never previously repaired in the district were forced to have their repairs and overhauls executed in South Wales. The principality rose to the occasion and notwithstanding the shortage of labour managed to get through the work by keeping their yards going day and night, including Sundays. In fact, only two vessels, or 221,349 gross tons, less were dry-docked in South Wales during the first six months of 1915, as compared with the same period of the previous year. Detailed figures for each port are appended:—

January 1 to June 30.

Port.	1914. Vessels.	1914. Gross Tons.	1915. Vessels.	1915. Gross Tons.
Cardiff	508	1,469,672	522	1,370,686
Swansea ...	105	187,776	108	201,706
Newport	175	507,320	184	473,628
Barry	229	805,499	205	671,530
Port Talbot ...	49	96,898	45	128,266
Totals	1,066	3,067,165	1,064	2,845,816

In addition to the above many vessels were repaired in the wet docks, work above the water line being particularly plentiful.

THE FREIGHT MARKETS

(From Our Own Correspondents.)

London.

It is hardly to be expected that a full resumption of chartering business will be arrived at until the latter part of the week. In the meantime, it is satisfactory to note that, so far as the River Plate section is concerned, rates have maintained a steady level. Pacific business, too, is steady. The Eastern market has continued dull. Home to the United Kingdom from San Lorenzo, the *Queenmoor*, a 5,300-ton, 10 per cent. vessel, has been taken up at 61s. 3d., whilst the *Dalton*, a slightly large boat, is fixed, at 60s., from San Lorenzo, or Bahia Blanca to the United Kingdom, wheat or maize. A later fixture from the Plate is that of the *Etoila*, 5,500 tons, 10 per cent., which has been taken up, for August-September, to the United Kingdom at 62s., option French Atlantic ports at 65s., or the Mediterranean 67s. 6d. From Bombay, with ore, to the West Coast United Kingdom, the *Zambesi* has been conceded 52s. 6d. The *Lavinia Westoll* has also been taken up at the same figure, with ore to Middlesbrough. The *Cadmus*, a 3,000-tonner, has been fixed to load rice at 72s. 6d., option maize at 73s. 6d., Saigon to France. Vladivostock to United Kingdom is quoted at 85s. For grain loading at Northern Range ports there is a pronounced inquiry, at, for heavy cargoes, 10s. Spain, 9s. 3d. French Atlantic destinations, and 8s. 3d. United Kingdom. From the Gulf the *Hatumet*, 30,000 quarters, 10 per cent., has been closed, August-September, at 11s. to West Italy. For September, also to West Italy, the *Eleni Bistis*, 24,000 quarters, 10 per cent., has been fixed at 11s. 3d. Coal business from the States find representation in the closing of the *Commonwealth*, 5,400 tons, and the *Southwaite*, 5,600 tons, to the Plate at 34s. 6d. Home from Alexandria to Hull the *Tregenna* and *Robert Adamson* have been conceded 20s. per 60 ft., August. Marked steadiness characterises the level of rates outwards from the Tyne, and there is every likelihood of activity in fixing. Port Said commands about 24s., whilst for boats to load for the Islands 19s., is procurable. Fixtures reported at the close of last week include: London, 6s. 6d.; Rochefort, 17s.; Lisbon, 19s.; Havre, 12s. 9d.; and Genoa, 25s. Cardiff reports a dull and irregular market after the holidays. Rates secured for Cardiff loading include: Marseilles, 17 fr.; Lisbon, 10s. 6d.; Huelva, 12s. 6d.; and Genoa, 16s. Newport to Gibraltar has paid 13s. 6d. to the *Anna Maersk*. From Liverpool to Bordeaux the *Nyroca* has been taken up at 15s. Hull to Rouen has paid 13s. 4½d. for a 2,500 tonner.

Glasgow.

Chartering on the Glasgow market was interrupted at the beginning of the present week owing to the bank holiday, but business reported previous to the closing down showed little change in rates. Outward freights in the coal trade were perhaps a trifle easier owing to the more plentiful supply of tonnage. The following were among the fixtures reported:—Glasgow to Gibraltar, 1,700 tons, 17s.; Glasgow to Caen, 900 tons, 16s.; Glasgow to Genoa, 3,400 tons, 20s.; and Troon to Genoa, 3,500 tons, 20. Several time charter fixtures were reported in the North Atlantic trade at about 14s. 6d. on deadweight, and a large steamer was fixed for one Australian round at about 15s. on deadweight. Other time charters were American trades, delivery and re-delivery U.K., nine months, £5,000 per month; time charter, White Sea trade (steamer), 4,600 tons, 26s., one round trip, delivery Wales, re-delivery East Coast. Homeward markets were quiet on account of the English holidays. Rates from the River Plate were steady at about 61s. 3d. from up-river ports. In the East Bombay paid 55s. to Liverpool and 53s. 9d. to Hull.

Liverpool.

A general survey of this market shows no noteworthy change in freight rates beyond the effect which the coal strike has had on outward business which is still depressed. The freedom with which tonnage is offering has caused rates to drop and remain easy, and as far as coal freights are concerned it will take some little time for them to get back to their former level. Fixtures on this market include the following: Liverpool to Gothenburg, 22s. 6d.; Birkenhead to Dunkirk, flour, 17s. 6d.; and basis of coal freights, Partington (ship Canal) to Rouen, 1,800 tons, 13s., prompt; Partington to Genoa or Savona, 2,000 tons, 20s. prompt; and Garston to same ports, 19s. prompt. Time charters are quiet, but rates keep steady and hold to about 14s. for round voyages. In the homeward trade section, River Plate after showing a little weakness has steadied on basis of 62s. 6d. to United Kingdom, from San Lorenzo. There is not much inquiry, however, and it may be difficult to repeat this rate for August-September cancelling, unless a better demand for tonnage sets in. America keeps firm a tone for grain at 11s. 3d. to 11s. 6d Gulf to West Italy, and 9s. 9d., is quoted Northern range to West Italy for August. There is some inquiry about for cotton tonnage on basis of 140s. for good capacity boat Galveston to Liverpool. Eastern markets are steady, and 72s. 6d. paid Saigon to Marseilles. North Pacific firm at 95s. to United Kingdom, with 2s. 6d. extra to France, and 5s. extra to Mediterranean. India keeps steady, but uncertain, and Bombay alone shows any strength. The Mediterranean homewards keeps steady, but business is dull and featureless. Nitrate ports have some inquiry to United Kingdom on basis of 82s. 6d. The demand for sail tonnage at the nitrate ports has eased, and 58s. is now ruling for December-January.

Newcastle-on-Tyne.

In spite of the fact that the holidays made a break in the past week's business, the Tyne freight market has been very active. There has been a tremendous improvement in the local coal trade since the South Wales strike, with a consequent increased demand for tonnage. In the ordinary course of events, this factor would have brought about an advance in rates but an unlooked-for circumstance has prevented any improvement in prices. After vainly awaiting cargoes and quoting ruinous rates at the Bristol Channel, many owners had sent tonnage round to the East Coast, with the result that a surplus of steamers is offering. Apart from this, rates have naturally tended to adjust themselves to the level of those at Cardiff. There has, therefore, been a very general decline in quotations. Coastwise, little business has been transacted. The ruling figure for handy boats has been 7s. to London, but the only business reported is at 6s. 6d. for a 3,200 tonner. Much of the week's business has been done for North France, but here also there is considerable weakness. Rouen is down fully 1s. and now stands at barely 13s. 6d. Havre is 6d. lower and Caen from 6d. to 1s. cheaper, whilst Dunkirk is easier. Prices for Bay ports had also suffered severely on the week, Bordeaux being down to 17s., a reduction of 1s. Mediterranean-wards, the promise of last week has not been fulfilled and prices again show ease. Genoa is about 1s. reduced and Marseilles from 1s. to 1s. 6d. lower. A fixture to Rotterdam at 12s. 6d. is worthy of note. Fixtures arranged since last report include the following: Algiers, 3,000, 18s. 6d.; 3,200, 18s.; Bayonne, 3,000, 17s. 6d.; Barcelona, 4,500, 22s. 6d.; 2,800, 24s.; Boulogne, 470, 20s., coke; 1,000, 13s.; 600, 12s. 6d.; Buenos Ayres, 5,200, 24s.; Bordeaux, 2,000, 18s. 6d.; 3,000, 17s. 6d.; 4,000, 17s. 6d.; 2,000, 17s.; Calais, 1,000, 13s.; Caen, 1,550, 12s. 6d.; Copenhagen, 2,000, 12s.; Caen, 1,200, 13s. 3d.; 800, 12s. 6d.; 900, 13s.; Dunkirk, 1,800, 13s. 6d.; 1,800, 13s. 6d.; 1,000, 13s.; Fecamp, 1,800, 13s. 6d.; Genoa, 3,000, 25s.; 6,500, 24s. 6d.; 4,500, 24s.; Havre, 3,200, 12s. 6d.; 1,000, 13s.; 1,300, 12s. 9d.; 1,200, 12s. 3d.; Lisbon, 3,500, 17s. 3d.; 1,960, 19s.; London, 3,200, 6s. 6d.; Las Palmas, 2,000, 19s. 6d.; 2,800, 19s.; Morlaix, 500, 15s.; Marseilles, 3,200, 23s.; Malaga, 2,200, 22s.; Malta, 4,400, 19s.; Palma, 1,800, 25s., reported; Port Said, 3,100, 24s.; 5,000, 24s.; Rouen, 1,000, 14s. 6d.; 2,500, 14s. 6d.; 1,700, 14s. 6d.; 1,650, 14s.; 1,500, 13s. 6d.; Rotterdam, 1,700, 12s. 6d.; St. Nazaire, 1,750, 17s.; Spezzia, 3,000, 25s.; Savona, 3,000, 25s.; 4,400, 24s.; Teneriffe, 2,800, 19s.; and Treport, 400, 20s., coke.

Cardiff and Swansea.

With the amount of coal available for shipment on ordinary commercial account very limited as a result of the heavy requirements of the Admiralty together with the fact that production in the coalfield was not up to normal levels after the Welsh miners' strike, stems were exceptionally tight. At the same time tonnage was well in excess of the demand as merchants were unable to quote definite orders as they were not sure of obtaining coal. Tonnage which had accumulated during the coalfield stoppage was thus in excessive supply and rates consequently sharply declined and dropped to levels never previously reached during the current year. In fact, further new low records were established and is not anticipated that any material improvement can take place until after the middle of the month. For the Mediterranean ports Algiers was done down to as low as 17 fr.; Gibraltar, 13s. 6d. and 13s. 3d.; Huelva, 12s. 6d.; Naples to Leghorn, 16s. 6d., 16s. 9d., 16s. 3d., and 15s. 3d. (all 800 tons delivery); Genoa with options, 16s., 17s. and 16s. 6d. (twice); Marseilles, 17 fr.; Lisbon, 10s. 6d. and 10s.; Oporto, 12s.; Alexandria, 20s. (500 tons delivery, twice); Malta, 16s. and Seville, 13s. The Bay and Coasting markets also were weak with owners accepting figures which established new low records for the current year, Dieppe fixing at 9s.; Caen, 9s. and 9s. 6d.; Nantes, 9½ and 12½ fr.; Honfleur, 9s. and 10s.; Calais, 9s. 9d.; Bordeaux, 10, 11 and 12 fr.; Rouen, 8s., 10s. (twice) and

[illegible] Hull. [illegible] for the Mediterranean direction though there are signs of more inquiry for tonnage for the West Italian ports. In the River Plate direction there is very little movement. The coast trades, chiefly with the North French ports, are keeping active though a slight check has occurred owing to the holiday stoppage making stems difficult to arrange through scarcity. The general tone of this coasting market is easier and for Rouen from Hull 13s. 4½d. and 13s. 6d. has been accepted for tonnage, as compared with 15s. paid a week ago, whilst other business done has included 12s. 6d. for Dieppe from Hull; 13s. 6d. for Honfleur from Hull; 13s. for Dieppe from Goole; 8s. for Brixham from Hull; and 6s. 6d. to 7s. for London from Hull.

THE COAL TRADE.

With a complete settlement of the untimely dispute in the South Wales coalfield, this market has once more reverted to a state of normal activity. But, all the same, the decision that the men were to return to work, did not, as though by a stroke of the pen, at once restore normal conditions, for the week of idleness made business at first very difficult. Since then, however, matters have adjusted themselves. It is generally admitted that, in bringing the dispute to an end, the masters have given away more than they could have been expected to do in times of peace. That, however, hardly need be dilated upon, and the really satisfactory feature is that all trouble is at an end, and that, too, with a better understanding on both sides than has been arrived at in previous disputes. There is little likelihood of further dissatisfaction arising.

Not a superabundance of free coal has come on the open market since the resumption, and the major part of the output has been taken by the British and French Governments. Italy, too, has taken a fair amount. The licence question has not become less difficult, and the prices of free coal have consequently stood at a high level.

With the intervention of the holidays, business was, at the close of last week, largely confined to cleaning up, operators' efforts being directed towards getting vessels away. It is not to be expected that any large volume of coal will be available during the first half of the present week and but few negotiations will be carried through. Tonnage promises to come along in good supply for the next week or so. Approximate quotations are:—Seconds, 31s.-32s.; best washed nuts, 28s.-29s.; ordinary washed, 25s.-26s.; Black Vein (Cardiff shipment), 29s.-31s.; Western Valleys (Cardiff shipment), 29s.-30s.; best Eastern Valleys, 27s.-28s.; best steam smalls, 22s. 6d.-23s. 6d.; and pitwood, 24s. 6d.-25s. 6d.

The North-East Coast.

The holiday has, of course, exerted its influence on the Tyne market. Business at the close of last week was characterised by a good tone and the prospects for shipments are quite satisfactory. For early loading a good volume of tonnage has been fixed, and as a good part of the business now under weigh does not involve the securing of licences, there ought not to be any pronounced delay in getting ships to sea. Values, on the whole, have maintained their firmness, with Tyne primes at 19s. 6d.; seconds, 17s.; and Blyth smalls at 14s. Of D.C.B. steams not much is offered, and the quoted price at the close of last week was in the neighbourhood of 22s. In the bunker section ordinary Tyne qualities stood at 16s., bests at about 17s. 6d. and specials at 21s. Freight rates have maintained a steady level. London has been done at 6s. 6d., a remarkable fall from the rate prevailing not so very long ago.

London.

Here, also, the holiday influence was well in evidence on 'Change last week, and not a large volume of business was concluded. There was, however, a strong effort made to secure quick delivery of back orders, which had suffered delay. The seaborne section is best described as nominal. Steam coals were firm all round.

Genoa Inquiry.

The continued fall in outward freight rates from the United Kingdom has upset Genoa buyers' ideas, with the result that their offers were considerably less than the figures to which sellers adhere. Inquiries are, however, coming along satisfactorily, and the general view is that an improved market is to be looked for. Italy has bought considerably of American coal, and at Genoa, and also now on passage, a good volume of this coal is offering at low prices. It is not to be assumed that the American produce stands in favour with Italian consumers. As a matter of fact, other things being equal, it is the British coal which is generally preferred. There has been a strong call for anthracite. Cardiff seconds were last week worth about 48s., and for Newport sorts quotations ranged from 45s. to 46s. 6d. A cargo of Tyne seconds changed hands at 42s. 6d.

The Mersey.

As an after effect of the recent South dispute there was an increase in the volume of tonnage offering to load coals from the Mersey. This, of course, operated to reduce rates of freight. Just prior to the holidays good Lancashire bunkers stood at 19s. to 20s. f.o.b. Garston or Liverpool. For Yorkshire hards 22s. 6d. to 23s. 6d. was the prevailing quotation, with North Wales descriptions at 21s., from Ellesmere port or Birkenhead.

COMPANY REPORTS.

Wm. France Fenwick & Co., Ltd.—Interim dividend of 5 per cent. on the ordinary shares.

Ulster Steamship Company, Ltd.—Interim dividend at the rate of 6 per cent. per annum, less income-tax, for the six months ending July 31, 1915.

Cuxhaven Brunsbüttel Dampfer A.G.—For the first time since its foundation, this company distributed a dividend to its shareholders, viz., 5 per cent. for the year 1914.

Alexandra (Newport and South Wales) Docks & Railway Company.—The directors have declared interim dividends on the "A" and "B" preference stocks at the rate of 4½ per cent. per annum for the half-year ended June 30, 1915.

Cardiff Railway Company.—The directors have declared the following dividends for the half-year ended June 30, 1915—at the rate of 4 per cent. per annum on the preference shares, 4 per cent. on the preferred ordinary stock and 3 per cent. on the second preferred ordinary shares. The distributions are the same as for the corresponding period of 1914.

Manchester Ship Canal.—The gross receipts for the half-year January-June were £360,292, an increase of £33,007 as compared with the corresponding period of the preceding year. The net income of the whole undertaking was £204,448, against £171,545, being an increase of £32,903; but as new interest charges amounting to £10,500 had to be met, the increase of net revenue, after payment of all prior charges, was £22,403. £13,000 is included as a receipt in the above statement of the half-year's results in respect of ship canal tolls on Government cargo which the Government have not yet agreed to pay.

Schiff- und Maschinenbau A.G. (Mannheim).—During last year this company realised a gross profit of £3,790 (£7,440 for 1913-14). Allowing £1,900 (£2,470) depreciation, there remains £6,780 (£9,780) net profit from which 8 per cent. (14 per cent.) dividend was paid to preference shareholders and 6 per cent. (12 per cent.) on ordinary shares. All departments were busy during the year, military requirements being particularly heavy in the later months. The fact that the financial statement is, nevertheless, unfavourable is said to be due to shortage of labour having brought much work to a standstill.

Hain Steamship Company, Ltd.—The report for the year ended June 30 states that after paying an interim dividend of 5 per cent., debenture interest and income-tax, there remains to the credit of profit and loss an available balance of £277,616. Of this amount the directors propose to pay a further dividend of £1 10s. per share, making 20 per cent. for the year, transfer £150,000 to depreciation account, credit £25,000 to special income-tax reserve account, devote £10,000 to writing down investments, set aside £10,000 as a bonus fund for the company's officers and engineers, and to carry forward a balance of £7,681. During the year five

new steamers, each of 7,800 tons deadweight, have been added to the fleet.

Suddeutsche Donau - Dampfschiffahrt - Gesellschaft (Munich).—During 1914, the company realised £142,500 (£132,500) gross profit, including £320 (£2,580) brought forward from previous year. After deducting all charges and £17,600 (£15,900) depreciation there remained £8,050 (£5,800) net profit from which 4½ per cent. (3¾ per cent.) dividend was paid and £1,265 carried forward to current account. Business was brisk during the first half-year but, on the outbreak of war, the company's energies were first devoted to bringing steamers from the lower reaches of the Danube to a point of safety (in which they were apparently only partially successful). During the second half-year traffic was practically confined within the frontiers of the Austro-Hungarian Monarchy. At the end of the year the fleet comprised 11 (12) steamers, 6 (3) motor cargo-boats, 113 (115) tugs and a floating crane.

Cantiere Navale Triestino (Monfalcone).—The annual report for 1914 shows a small improvement, attributable to the further development of the dockyard installation. Emphasis is laid upon the fact that after some months absolute standstill in shipping circles, great interest has been aroused in building new vessels in anticipation of the great demand which will arise after peace is declared. Current orders ensure full operation of the whole plant during this year and part of next year. After allowing £29,500 depreciation, the net profit, including £4,620 brought forward, amounts to £34,400, which sum has been applied as follows:—Reserves, £1,720; 7 per cent. dividend, £26.300; director's share of profits, £1,500; carried forward, £4,950. The present share capital is £375,000; liabilities, £320,000; payments on work commenced, £428,000. Vessels under construction are assessed at £562,000; outstanding credits, £200,000; war loan, £24,400; shares and bills, £9,200; cash, £1,360. Stocks of materials and coal are assessed at £56,000.

Mountstuart Dry Docks, Ltd. (Cardiff).—The directors in their report for the year ended June 30, 1915, state that an interim dividend at the rate of 6 per cent. per annum on the preferred ordinary shares and at the rate of 4 per cent. per annum on the deferred ordinary shares was paid in January, 1915, after providing for which, adding the balance brought forward from 1914, and allocating to depreciation the sum of £10,000, there remains a balance of £41,243 11s. 4d. for distribution. Out of this balance the directors recommend that a further dividend at the rate of 6 per cent. per annum on the preferred ordinary shares and at the rate of 8 per cent. per annum on the deferred ordinary shares be declared, making a total distribution for the year of 6 per cent. on the preferred ordinary and 6 per cent. on the deferred ordinary shares, leaving £27,240 15s. 4d. to be carried forward.

As will be noted from the above the company does not disclose the profit they made in the year, leaving their shareholders to work out the figure for themselves. Apparently the profit after paying debenture interest is £33,768. Profits and dividends since 1910 are as follows:—

Year.	Profit. £	Dividend. Prefd. Ord. Per Cent.	Defd. Ord. Per Cent.
1910	24,532	6	5
1911	22,908	6	5
1912	11,310	6	4
1913	35,070	6	5
1914	35,052	6	6
1915	33,768	6	6

ORDERS PLACED.

The Fore River Shipbuilding Corporation, Quincy, Mass., has booked a second order from the Luckenbach Steamship Company, New York, for a cargo steamer of large capacity. Unlike the first one ordered this boat will have reciprocating machinery and an overhanging stern. The steamer previously ordered is to have a cruiser stern and Curtis geared turbines.

The oil tank steamer to be built at Collingwood, Ontario, for the Imperial Oil Company, Ltd., Toronto, is to be 258 ft. long, 43 ft. beam and 18 ft. deep to main deck, with an expansion trunk 7½ ft. above the deck running fore and aft. The vessel is to be classed with Lloyd's for ocean service, and will be used either on the lakes or ocean as may be required. The ship will have 10 tanks for crude or refined oil, and four tanks for lubricating oils. She will have a speed of 8 knots, loaded.

NEWS PARAGRAPHS.

The Cruiser "Hindenburg."—At the Kaiser shipyard at Wilhelmshafen the launching of a large cruiser took place. It was called the *Hindenburg*.

Utilising an Enemy Ship.—The Government of Western Australia has chartered the steamship *N 2*, which was originally the Norddeutscher-Lloyd *Prinz Sigismund*.

"Lusitania" Relief Fund.—At the request of the Lord Mayor of Liverpool, the Mayor of Southampton opened a fund for the sufferers by the *Lusitania* disaster, and a sum of £131 18s. was raised.

Cape Mala Light in Service.—The new light at Cape Mala, at the western point of the Gulf of Panama, has been placed in service. It is equipped with a red sector to the northward covering Iguana Island and reef, and a red sector to the southward, covering the North and South Fraile Rocks, which are distant about 12 miles from Cape Mala.

Oregon-California Service.—The new cargo service between Philadelphia, New York, San Francisco and Portland, Ore., will be known as the Oregon-California Shipping Company. Messrs. L. Rubelli Sons are agents of the new service. The first vessel, the ss. *Eureka*, will leave Philadelphia about August 12, and the ss. *Tampico* about August 24.

Great Lakes Transfer Scheme.—Reports are current at Buffalo, N.Y., that a number of Buffalo business men are interested in a project to purchase a number of the railway-owned Lake cargo steamers which must be sold under a decision of the Inter-State Commerce Commission, and organise an independent line of steamers to serve the ports of the Great Lakes.

Motor Vessels and Italy.—According to the *Board of Trade Journal*, His Majesty's Embassy at Rome reports the publication of a Royal Decree, which empowers captains and port officials to prohibit the entry into or departure from Italian ports of sailing or other craft of any nationality provided with motors. This prohibition also applies to vessels in ports of Italian colonies and to craft sojourning in Italian territorial waters.

The "Verein Freies Meer" is issuing in the German Press appeals for donations, and is forming a membership of those who will promise an annual subscription of at least 5s. or pay 50s. in respect of life membership. In the first list of donations, Blohm & Voss, Hugo Preuss and H. A. Wilkins are each set down for £50, and the total is £530, to which is added a £1,750 subscription from the Invasionverein, "payable at latest after the successful defeat of England!" Appropriately enough a heavy type appeal for further subscriptions follows the announcement of this canny contribution.

Maryland Steel Company Extensions.—The marine department of the Maryland Steel Company at Sparrows Point has found it necessary to make several extensions in order to cope with the work on hand. At present the yard has five building slips, one of them having been completed recently. Another slip will be constructed in the near future and additional equipment in the way of cranes and, possibly, a machine shop is contemplated. The Maryland Steel Company has nine ships under contract, three each for the Munson Line, the American-Hawaiian Line and the A. H. Bull Steamship Company, all of New York.

Confiscation of Enemy Ships.—The First Lord of the Admiralty replying to a suggestion by the Navy League that enemy merchant ships now interned in British ports at home and oversea should be confiscated, says that the policy of confiscating these vessels as an act of reprisal against the indiscriminate sinking of British merchant ships by German submarines is one that has been raised on several occasions during the war, but after very full consideration it was decided that the balance of advantage lay against its adoption. Full use is being made of every interned or captured enemy merchant vessel that is seaworthy.

New Lines.—According to a report of the German Vice-Consulate in Umea, the Angfartygsaktiebolaget Bore in Abo has decided to maintain daily service by three small steamers between Wasa and Umea for cargo and passenger traffic. The German Consulate at Tetuan reports that the Koniglich Niederl ndische Dampfschiffahrtsgesell. Amsterdam (cargo line) intends to establish a service to French and Spanish Morocco and has sent two directors

to Morocco to make the necessary arrangements. It is said that the intention is to sail from and to Amsterdam, calling at a British port and handling, in particular, British exports to Morocco.

Panama Landslide.—Lloyd's agent at Colon telegraphed on Tuesday: "Heavy slide Culebra Cut since Sunday; several steamers head up. Expected resume normal traffic to-morrow."

Leopold Walford & Co.—Messrs. Leopold Walford & Co., 29, Great St. Helens, London, E.C., have, for reasons of personal convenience, formed a limited liability company under the style of "Leopold Walford (London), Ltd.," for the purpose of acquiring their business. The directors of the new company are Mr. C. P. Walford, Mr. L. H. C. Walford, and Mr. R. J. Price, and the arrangement will in no way interfere with present engagements, which will be executed by the firm.

Coal Export Restriction. The Board of Trade announces that by an Order of Council the exportation of coal and coke will no longer be permitted freely to Allied countries on and after August 13, and will be prohibited to all destinations abroad other than British Possessions and Protectorates. Applications for licences to export these commodities to prohibited destinations should, as hitherto, be addressed on a special form to the War Trade Department, at 4, Central Buildings, Westminster, London.

American Seamen's Act.—It is reported that, as the result of strong representations by American and foreign commercial and shipping interests, the coming into operation of the United States Seamen's Act will be postponed indefinitely. Although at the moment, neither confirmation nor denial of the statement is obtainable, it is said, by way of lending colour to it, that the Pacific Mail Steamship Company will not discontinue its trans-oceanic service, but that after October 1 next its calls at Honolulu will be dropped. Negotiations are, however, still in progress between it and a Chinese syndicate for the purchase by the latter of its fleet.

P. & O. Services.—The P. & O. Company announce the following alterations in their services:—As regards the local services from Hong-Kong, there is no longer a regular service between Hong-Kong, Cebu, Iloilo and Mangarin, but these ports are still served by occasional steamers. The main ports of call in Formosa are now Tamsui and Keelung, between which ports there is a rail connection. A steamer leaves Hong-Kong practically every week for one port or the other. There are now two departures each week from Hong-Kong for Foochow instead of one only as formerly, and departures for Saigon now take place on alternate Saturdays. Passengers booked through to Brisbane and Queensland ports proceed by one of the steamers of the Australasian United Steam Navigation Company or other local steamer from Sydney.

U.S. Submarines.—The new 3-in. disappearing guns, designed by the Bureau of Ordnance, to be placed in the United States submarines of the "M" and "N" classes, will not only be available to use in an attack on an enemy's craft, but will have such a high angle of fire that they will be effective against all classes of aircraft. Most of the navy's submarines would be helpless under present conditions if attacked by an aeroplane when coming to the surface. With the high angle gun in the submarine the aircraft will have a serious factor to contend with. The new 3-in. gun is shorter than the regular 3-in. navy rifle to meet space limitations. This reduces its range somewhat. The *Army and Navy Journal* states that the sea-going submarine authorised by the last Congress may be armed with rifles of 4-in. calibre. The first disappearing gun for use on an American submarine was shipped to New York from the navy's gun factory on July 12, to be installed aboard the new submarine *M* 1. The new gun is said to weigh, with its carriage, only 1,800 lb., and automatically disappears into the submarine after each discharge.

Increased Share Capital.—The Ottenser Eisenwerk-A.G., Altona-Ottensen, has decided to increase its share capital by £31,800 (making £98,000 total). The new issue is to consist of £12,200 ordinary shares and £19,600 new bearer bonds issued at 115 per cent. The increase in foundation capital is to be admitted if, on June 1, 1917, the total shares issued amount to £19,600, and, in any case, the increase of £12,200 is definitely undertaken. The object of the new issue is to acquire £14,600 worth of shares in the Ottenser Maschinenfabrik, G.m.b.H., in Altona-Hamburg, and the extension of the works of the latter company for the manufacture of marine engines up to 5,000 i.h.p. The present holders of the £14,600 Maschinenfabrik stock will receive £12,200 worth of shares in the Eisenwerk-A.G., besides £2,950 in cash and £730 from the first adequate balance of the reconstructed company. The Eisenwerk-A.G. already possesses £490 worth of Maschinenfabrik stock. The former company has so far been engaged chiefly in boiler making and brisk business is said to be in sight for both concerns for some time to come.

Glasgow Steel Export Committee.—The Admiralty, in order to facilitate business and to expedite the granting of certificates for the export of steel and articles manufactured therefrom, invited the Glasgow Chamber of Commerce to set up a committee to deal with the issue of licences for the export of these articles. The Chamber of Commerce nominated the following gentlemen, viz.:—Mr. Montagu M. W. Baird, President; Mr. James W. Murray, Vice-President; Mr. W. J. Chrystal (Messrs. John & James White, chemical manufacturers, Glasgow), Mr. Archibald Colville (Messrs. David Colville & Sons, Ltd., Dalzell Steel and Iron Works, Motherwell), Mr. James M'Skimming (Steel Company of Scotland, Ltd., Glasgow), Mr. T. O. Mathieson (Messrs. Alex. Mathieson & Sons, Ltd., tool makers, Glasgow), and Mr. George A. Mitchell (Messrs. Stewarts & Lloyds, Ltd., steel manufacturers, Glasgow). The Admiralty approved, and the committee has been constituted. All communications on this subject should be addressed to the secretary of the Chamber, 7, West George Street, Glasgow.

Shipping at Calais in 1914.—His Majesty's Consul at Calais (Mr. P. Wilkinson) reports that the returns of shipping of all nationalities show a total of 1,676 vessels entered and 1,668 vessels cleared at the port of Calais in 1914, a decrease of 650 vessels entered and 653 vessels cleared as compared with 1913. The total tonnage of vessels entering was 969,818 tons and of vessels clearing 948,523 tons. The suspension of the mail boats to Dover early in August chiefly accounts for this considerable falling-off. The cargo vessels of the South-Eastern & Chatham Railway Company, which used to come to Calais regularly at the rate of about one a day, excepting Sundays, were also stopped at the outbreak of war, entailing thereby a further decrease in the tonnage at this port. 1,086 British ships entered the port in 1914, the aggregate registered tonnage being 646,009 tons, or 66 per cent. of the entire tonnage entered. Of these, 1,086 vessels, 241 with a tonnage of 46,279 tons, were cargo vessels of the South-Eastern & Chatham Railway Company, 219 vessels of 185,333 tons were miscellaneous cargo vessels, while the remainder were cross-Channel passenger steamers. The only addition to the steamship lines regularly visiting Calais in 1914 was a French coasting service between that port and Havre and *vice versa*. This line was inaugurated under the auspices of the French Chamber of Commerce, the primary object being to relieve the congestion on the railway line between Paris and Calais and to secure cheaper rates of transport. It may, however, be added that in the latter part of the year an enterprising firm at Calais tried to start two new lines under the British flag, one to run between Calais and London and the other between Calais and Liverpool, but the scheme had to be abandoned owing to the high freights prevailing and the lack of steamers.

COMPANY REGISTRATIONS.

Herbert Smart & Co., Ltd.—Capital, £6,000. Objects, to carry on the business of shipbrokers and owners, freight contractors, forwarding agents, &c. Signatories, H. Smart and F. Auliff, both of 37, Jewry Street, E.C. First directors, H. Smart, W. Stoneham and F. E. Pearce. Private company.

James Morton, Ltd.—Capital, £3,000. Objects, to carry on the business of nautical instrument makers and adjusters formerly carried on by T. Morton and the late J. Morton, at Sunderland and South Shields as "James Morton." First directors, T. Morton and J. C. Morton. Registered office, Villiers Street South, Sunderland. Private company.

Aberdeen General Steam Fishing Company, Ltd.—Registered in Edinburgh. Capital, £4,000. Objects, to carry on the business of fishing by line, trawl, &c. First directors, J. Thomson, M. Thomson, C. B. Miller, J. B. Campbell and C. C. Fraser. Registered office, 164, Market Street, Aberdeen. Private company.

Tulloch & Co., Ltd.—Capital, £30,000, in £1 shares (5,000 preference). Objects, to take over the business carried on at London House, Crutched Friars, E.C., as "Tulloch & Co.," and to carry on the business of shipowners, shipbuilders, charterers of ships, warehousemen, ship and insurance brokers, carriers, forwarding agents, wharfingers, &c. First directors, A. O. Wright and R. Ward (joint managing directors for life). Registered office, London House, Crutched Friars, E.C. Private company.

OFFICIAL NOTICES AND SHIPS FOR SALE.

FOR SALE.

(PARTICULARS NOT GUARANTEED.)

Folio 8514.—Built 1910. Surveyed 1915. About 6,900 tons d.w. on about 23 ft. draught. Single Deck. Triple Engines. Three Single-ended Boilers. Speed about 9½ knots on about 23 tons.

Folio 8965. Built 1900. About 6,500 tons on about 24 ft. 9 in. draught. Shelter Deck. Triple Engines. Two Single-ended Boilers. Speed about 9 knots on about 22 tons.

Folio 7751.—Built 1898. Surveyed 1914. About 5,550 tons d.w. on about 22 ft. 6 in. draught. One Deck and Spar Deck. Triple Engines. Two Single-ended Boilers. Speed about 9–9¼ knots on about 20 tons. Prompt Delivery.

Folio 6449.—Built 1891. Surveyed 1912. About 4,400 tons d.w. on about 22 ft. 6 in. draught. Well Deck. Triple Engines. Two Single-ended Boilers. Speed about 8½ knots on about 14 tons.

Folio 3425.—Built 1901. Surveyed 1914. About 3,400 tons d.w. on about 17 ft. 10 in. draught. One Deck. Triple Engines. Two Single-ended Boilers. Speed about 8½ knots on about 14 tons.

Folio 8234.—Built 1903. Surveyed 1912. About 1,450 tons on about 14 ft. 10 in. draught. Well deck. Triple Engines. Two Single-ended Boilers. Speed about 9½ knots on about 9½ tons.

For further particulars, plans, prices, &c., apply to:—

THOS. PINKNEY & SONS,
Sunderland.

Telegraphic Address—"Spardeck."

FOR SALE.

Folio 4150.—Steel single-deck steamer, long bridge. Built 1903. About 5,450 tons d.w. on 22¼ ft. draught. Triple Engines. Two single-ended boilers. Speed 8½–9 knots on about 17 tons. Delivery U.K. in August.

Further particulars, plan, price, &c., on application.

EDWARD HALL,
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Cardiff.

Broker for the Sale, Purchase and Construction of Shipping Property; Marine Surveyor.

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To Builders of Submarine Boats and Power Plants therefor.

THE Proprietors of Patents Nos. 7674/05, 22210/05, 26794/07, 2182/09, 2267/09, 3255/09 and 9860/09, invite communications with a view to the sale of the Patents or to the granting of licences to work the inventions on reasonable terms. The proceeds of such sale or licences, if arranged, will be tendered to the Board of Trade to be held by the Public Trustee. Illustrated descriptions of the inventions will be forwarded on application. Address, BREWER & SON, 33, Chancery Lane, London, W.C.

OFFICIAL NOTICES AND SHIPS FOR SALE.

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Wednesday.

All advertisements should be addressed to—

Shipbuilding and Shipping Record,
Queen Anne's Chambers,
Westminster, London, S.W.

"SHIPBUILDING AND SHIPPING RECORD" TABLE OF SHIP SALES.

Name and type.	Tonnage.	Dimensions. Draught in ( ).	Sold by, to	Builders, hull and year.	Machinery and builders.	Remarks.
Bedeburn, ss. (spar dk.) (ex *Fort Dunson*)	3,449 gr. 2,177 net.	345′ × 46′ × 17′	Bede SS. Co. (Mgrs., Frew, Elder & Co.), Newcastle, to British buyers	Tyne Iron S.B. Co., Newcastle (1896)	24, 40, 64 × 45 (J. Dickinson & Sons, Sunderland)	—
Beekbergen, ss. (spar dk.) (ex *Langdale*)	3,917 gr. 2,447 net. 6,300 d.w.	366′ × 46¾′ × 17½′	Stoom. Maats. Indische Lloyd (N.V. Furness Scheepv. Agentunr. Maats., Mgrs.), Rotterdam, to Amsterdam buyers	J. Laing & Sons, Sunderland (1903)	25, 41, 67 × 45 (G. Clark, Sunderland)	—
Commonwealth, ss. (spar dk.)	3,353 gr. 2,183 net. 5,700 dw.	330′ × 45′ × 18¼′	"Commonwealth" SS. Co., Ltd. (Mgrs., Thomas & Appleton), Cardiff, to Kent SS. Co., London	Furness, Withy & Co., West Hartlepool (1896)	25, 38, 64 × 42 (Sir C. Furness, Westgarth & Co., Middlesbrough)	Price about £36,500.
Dawlish, ss. ..	3,446 gr. 2,216 net.	339′ × 46′ × 21½	Dawlish SS. Co. (Anning Bros.), Cardiff, to I. Samuel & Co., Cardiff	Richardson, Duck & Co., Stockton (1898)	24, 40, 66 × 45 (Blair & Co., Stockton)	Price about £41,000.
Detmold, ss. ...	4,431 gr. 2,817 net.	368½′ × 50¼′ 26¼′	Lydford SS. Co. (Mgr., W. Holzapfel), Newcastle, to British buyers	Sir J. Laing & Sons, Sunderland (1911)	25, 39, 66 × 48 (G. Clark, Sunderland)	
Dowgate, ss. (single dk.)	3,111 gr. 1,986 net. 5,250 dw.	325′ × 47′ × 22½	Dowgate SS. Co. (H. W. Dillon, Mgr.), London, to British buyers	Richardson, Duck & Co., Stockton (1904)	23½, 39, 64 × 42 (Blair & Co., Stockton)	
Gorsemore, ss. (single dk.)	3,079 gr. 1,980 net.	330¾′ × 46′ × 21¼′	Johnston Line (W. Johnston & Co., Mgrs.), Liverpool, to buyers not stated	Richardson, Duck & Co., Stockton (1899)	22½, 39½, 67 × 42 (Blair & Co., Stockton)	Price about £40,000.
Helen W. Martin (schooner)	2,265 gr. 1,965 net.	281½′ × 44½′ × 20¾′	Percy & Small, Bath, U.S.A., to buyers not stated	Percy & Small, Bath, U.S.A. (1900)	—	—
Jupiter, ss. (single dk.)	2,124 gr. 1,361 net.	285¾′ × 43¼′ × 19′	Hessler SS. Co. (Jacob Hessler & Co., Mgrs.), W. Hartlepool, to British buyers	Grangemouth & Greenock Dockyard Co., Greenock (1901)	21, 35, 57 × 39 (D. Rowan & Co., Glasgow)	—
Lansing, ss. (ex *British Queen*)	4,561 gr. 3,429 net.	400′ × 47½′ × 27¾′	Captain Osgood A. Gilbert, Mystic, to Victor Heath, Boston	Palmers Co., Ltd., Newcastle (1890)	29, 47, 76 × 51 (Palmers Co.)	For carrying coal and other cargo between New York or New Jersey and Boston.
Leonidas and Eleni (well dk.)	2,323 gr. 1,476 net.	289½′ × 39′ × 21′	B. Embiricos, Andros, to British buyers	C. S. Swan & Hunter, Newcastle (1889)	22½, 36½, 60 × 39 (Blair & Co., Stockton)	Price about £21,500.
Mansuri, ss. (spar dk.), (ex *Silvrea*, ex *Montblanc*, ex *English King*, ex *Osborne*)	3,227 gr. 2,042 net.	335′ × 42½′ × 19¼′	Bombay & Persia S.N. Co., Bombay, to Bank Line (A. Weir & Co., Mgrs.), London	C. S. Swan & Hunter, Newcastle (1894)	26, 42, 69 × 48 (G. Clark, Sunderland)	
Matoa, ss. ...	2,311 gr. 1,836 net.	290½′ × 40¼′ × 21′	Reid Wrecking Co., Sarnia, Ontario, to George Warren Transportation Co.	Globe Iron Works Co., Cleveland (1890)	24, 38, 61 × 42 (Globe Iron Works)	For coal trade on the coast of America.
Mayumba, ss. (pt. awning dk.)	2,516 gr. 1,649 net.	297′ × 39½′ × 18¾′	African SS. Co. (Elder, Dempster & Co., Mgrs.), London, to C. M. Farrar, Liverpool	R. Dixon & Co., Middlesbrough (1890)	22½, 37, 61 × 39 (T. Richardson & Sons, Hartlepool)	—
Olympia, ss. (pt. awning dk.)	2,464 gr. 1,618 net. 5,450 d.w.	296½′ × 40′ × 19′	D. Anghelatos, Syra, to British buyers	Richardson, Duck & Co., Stockton (1889)	22½, 37, 61 × 39 (T. Richardson & Sons, Hartlepool)	Price about £20,000.
Start Point, ss. (shelter dk.) re-named **Maxton**	3,840 gr. 2,410 net.	375½′ × 50′ × 21½′	Norfolk & North American SS. Co., to Furness, Withy & Co., W. Hartlepool	Irvine's S.B. & D.D. Co., W. Hartlepool (1912)	26, 42, 70 × 48 (Richardsons, Westgarth & Co., Hartlepool)	
Tosno, ss. ..	2,000 gr. 1,110 net.	318¾′ × 41¼′ × 18½′	T. Wilson, Sons & Co., Hull, to Russian buyers	Earle's Co., Hull (1907) ...	22, 36, 60 × 42 (Earle's Co.) ..	

SHIPPING SHARE MARKET.

[illegible] the market for shipping companies' shares has attracted a [illegible] attention of late, business being transacted in securities other than the War Loan. There is, however, a dearth of sellers [illegible] with other securities. [illegible] considerable and unusual number of inquiries for Indo China Steam Navigation Company's preferred and deferred shares, [illegible] and £4 respectively. Some months ago a person started the report that the company is to be taken over by the [illegible] and this appears to have been as much a [illegible] as the [illegible] that the company was to be [illegible] by the Baltic Shipping. The explanation of the demand for the shares has probably arisen from the possibility of an early arrangement being arrived at by the company with its Japanese competitors in the Calcutta trade, whose rates have been cut so fine for some years that it has seriously crippled the operations of the Indo China Company. Now that our Ally is on good more cordial relations with Great Britain it is possible that some permanent agreement or understanding may also be come to by which the competition on the Calcutta line will cease. The dividend on Indo China Co deferred shares was only 3 per cent for 1914, which does not justify the present price of over 7, but if the competition with the Nippon Yusen Kaisha could be eliminated the deferred might be expected to recover once more to 6 per cent which was paid in 1901. The Hain Steamship Company has issued an excellent report during the week and a final dividend is announced of 30s. per share, making 20 per cent. for the year to June 30. This is double the distribution of the previous year and compares with the record of 25 per cent. in 1912-13. The profits are £277,616 as compared with £153,157. The W. & C. T. Jones Steamship Company also pays 10 per cent. for the year to June 30, this rate being double that for 1913-14. Although the shares of both these companies are not actively dealt in on the London market, the issue of such favourable accounts creates a very favourable view of the outlook for Steamship Companies' shares.

SHIPPING, SHIPBUILDING, ENGINEERING AND MARINE INSURANCE SHARE LIST.

SHIPPING AND DOCKS.

Name	Share and paid	Extreme quotations, 1913.	Last ann. div. £ or per share.	Yield. %	Quotation, July 30, 1914.	Cash price during week.
	£					
African S.S.	20	21½—19½	7	7½	18—20	—
African Life ... ... Deb.	100	95—89	4	4½	93½—95½	—
Ancher Line ... Cum. pref.	10	10½—10	5½	5½	10—10½	10⅜
D ... ... Deb.	Stk.	98½—98½	4½	4½	104—106	104½
Argentine Nav. .. Cum. pref.	1	29/6—25/6	3	4	9/16—1/8	—
Do. ... .. Deb.	Bds.	104½—100½	6	6	98—100	91⅝
Australasian Un. S. Nav. Deb.	Stk.	84½—81½	4	4¾	80—83	—
Belfast Steam. ... "A"	10 (5pd.)	5½—4½	5	5	4½—5½	—
British & African Nav. Deb.	Stk.	102—101	4½	4½	96½—98½	103
British India Nav. ... Deb.	Stk.	104—98½	4½	4½	99½—100	94½
Bucknall SS. ... Cum. pref.	2	2½—1¾	5%	—	—	—
Cairn Line ... ... Deb.	Bds.	102—94	5	5½	91—93	—
Clan Line ... ... Ord.	10	14/2/8	15	10½	10½—11	13⅛
Court Line ... .. Ord.	£1		10	9	—	1⅛
Cunard SS. ... ... Ord.	1	35/8—28	2/6	9	1⅛—1½	2⅜
D... ...Cum. pref.	Stk.	103—97⅛	5	5¼	99—101	90½
Do. ... ... Deb.	Stk.	102½—99	4½	4½	101—103	96
Elder Line ... ... Deb.	Stk.	103—100	4½	4½	98—102	100
Elder Dempster ... Cum. pref.	1	1⅜—⅛	5½	5½	1⅛—1⅛	⅜
Do. ... ... Deb.	Stk.	105—99½	5	5¼	102—104	87½
Ellerman Lines ... Pref. Ord.	10	10⅜—10⅛	6¼	6	10—10⅜	9⅛
Do. ... Cum. pref.	10	10⅜—10⅛	4½	4½	10—10⅜	9⅛
France Fenwick ... Cum. pref.	5	9/6—9/6	5½	6½	4¾—5	4⅛
Furness, Withy ... Ord	1	34/3—25/6	10	8½	1⅛—1⅜	1⅛
Do. ... Cum. pref.	10	9½—9½	5	5½	9⅜—10	8½
General Steam Nav. Ord.	7½	6¼—5⅝	6	8	5⅜—5⅝	5¼
Do. ... ... Pref.	8	7¼—7⅛	6	7½	7¼—7⅜	6⅞
Houlder Line ... Cum. pref.	5	85/—60/-	Nil	Nil.	2⅜—2¼	4⅜
Do. ... .. Deb.	Stk.	84½—80	4½	5½	81—86	83
Houlder Bros. ... Cum. pref.	5	4½—3	5⅜	6	4½—4⅜	4
Do. ... .. Deb.	Stk.	85—78	4½	5	81—86	90½
India Gen. Nav. & Rly. ... Ord.	10	9½—7½	8	9½	9—10	8½
Indo-China N ... Pref. Ord.	5	5⅜—87/6	6	5½	3½—4⅜	5¼
Irrawaddy Flotilla	40	125—114	15	12½	126½—128½	—
King Line ... ... Ord.	10	9⅛—8	8	7½	8¼—9⅛	10⅛
La Guaira Harbour ... Deb.	Stk.	87—79	5	6½	78—80	73
Lamport & Holt ... Cum. pref.	£1	1⅛—4/8	6	6	1/6—1⅜	1/8
Leyland (F.) ... Cum. pref.	10	11—9⅜	10	12½	7¾—8½	8
Do. ... ... Deb.	100	99½—95½	4	4	99—101	—
Mercantile SS. ... ... Ord.	5	8/16—6¾	17½	10⅜	6—6⅜	8⅜
Do. ... ... Pref.	1	18/—16/3	5	5½	¾—1	1/16
Moor Line ... ... Ord.	10	14—11⅝	15	—	—	—
Nelson Steam Nav. ... Deb.	100	103⅜—99	5	5¼	99½—101½	97½
New Zealand ... ... Ord	8	20½—10⅜	8	8	14½—15½	19
D... ... Deb.	Stk.	95—92½	4	4¼	92—94	98½
Nitrate Producers SS. ... Ord.	5	8⅜—8	12½	7½	8—8⅜	12¾
Do. ... Cum. pref.	5	5—97/6	5/-	—	4⅜—5	—
Oceanic Steam. Nav. ... Deb.	100	100—96½	4½	4½	97—99	93½
Orient.Stm.Nav.Co. Cum. pref.	10	10⅜—9⅛	5	5⅛	9⅜—10	9⅛
D... ... Deb.	100	99—94½	4½	4½	98—100	98
P. & O. S. N. ... Cum pref.	100	125½—107	—	5¼	109—112	95½
Do. ... ... Def.	100	350—270	15	5	270—290	262
Do. ... ... Deb.	Stk.	91—83	3½	4½	84—86	86½
Prince Line	1	25/3—20/-	5/-	3	1—1⅛	1
R.M.S.P. ... ... Ord.	100	145—100½	Nil.	Nil.	82—87	72½
Do. ... ... Pref.	Stk.	100⅜—96	5	5¼	98—101	87½
Do. ... ... Deb.	Stk.	104½—100½	4½	5%	101—103	89½
Shaw, Savill & Alb. Cum. pref.	5	5⅜—96/3	5	5	1⅛—5	—
Shell Transport ... . Ord.	1	5½⅛—96/10½	30	5%	4—4½	4⅛
Do. ... Cum pref.	10	11⅞—10	5	5	10⅜—10½	9⅛
Sutherland SS. Co.	£1	1⅜—1	20	1.5%	1—1⅛	1⅜
Union-Castle SS. ... Cum. pref.	10	10—9⅜	4½	5	8½—9¼	8½
Do. ... ... Deb.	Stk.	95⅞—92	4	4	93—95	87½
Union SS. of N. Z. ... Deb.	Stk.	95—91	—	—	—	—
West Hartlepool ... ... Pref.	10	4½—3⅛	Nil.	Nil.	2⅜—3⅜	7½

INSURANCE

Alliance	20 (2½ pd.)	12⅞—11⅜	12/-	6⅜	11⅞—12⅜	9⅛
D... new shares	1	14⅛—12⅝	12/-	5½	13⅜—14⅜	10⅝
Indem. Mutual Marine ...	15 (3 pd.)	1⅜—⅞	1/3	5%	10—11	10
London Assurance ...	25 (12½ pd.)	54—49	20	5%	54—56	45½
Marine Insurance ...	25 (15 pd.)	38⅜—36⅜	45/-	6%	38⅜—39¾	36
Maritime Insurance	10 (2 pd.)	5⅜—4⅜	12½	—	8⅛—8⅜	—
Merchants' Marine Insurance ..	10 (2½ pd.)	6⅝—6⅛	7½	5	4—4½	3⅜
N. British & Mercantile ...	25 (6½ pd.)	10⅜—8⅝	40/-	5%	40½—41½	36
Do. Pref.	Stk.	10⅜—9⅞	4	4%	98—100	89½
Phœnix Assurance	10 (1 pd.)	7⅛—7	40	6¼	7⅞—8⅛	6⅝
Reliance Marine	10 (2 pd.)	7—6⅜	17½	4½	7⅛—7⅛	7⅛
Royal Exchange Assurance ..	Stk.	210—196½	10	5%	213—218	190
Sea Insurance	10 (2 pd.)	20—17⅛	8	4	20—21	20⅜
World Marine, Limited ...	5 (2 pd.)	25/—23 1⅜	5	5%	1⅛—1⅛	1⅛

* With arrears. † Includes 2½% bonus.

IRON AND STEEL.

Name.	Share and paid.	Extreme quotations, 1913.	Last ann. div. £ or per share.	Yield. %	Quotation, July 30, 1914.	Cash price during week.
	£					
Babcock & Wilcox... ... Ord.	1	69 4½—56 3	16	5½	2⅜—2⅝	2⅛
Baldwins ... Cum. pref.	1	22/6—21/3	5½	5½	1⅛—1⅛	1⅛
Do. ... ... Deb.	Stk.	100¼—100½	4½	4½	97—99	99
Bayliss, Jones ... Cum. pref.	1	—	5	7½	⅜—⅝	11/16
Bell Bros. ... ... Cum. pref.	10	12⅛—11	6	5⅛	11⅜—12⅛	10⅞
Do. ... ... Deb.	Stk.	98—96½	4	4⅛	96—98	96—98
Bessemer (Henry) ... Ord.	1	1⅛—1⅛	10	8½	1⅛—1⅛	1⅛
Bolckow Vaughan ... Ord.	1	22/6-19 4½	6	6½	1⅛—1⅛	—
Do. ... ... Cum. pref.	20	21⅛—20/-	5	5½	20—21	19½
Cargo Fleet Iron ... ... Ord.	1	11/10½—7/6	2½	5	⅛—⅛	—
Do. ... ... Deb.	100	91—85½	4½	5⅛	89—92	87
Consett Iron Co. ... ... Ord.	1	88/6—74/6	30	7½	3½—3⅞	3⅝
Dominion Iron & Steel	Bds.	100⅛—88½	5	6%	83—87	77
Dorman, Long ... ... Ord.	1	21/6—16/9	7½	8½	2⅞—3⅜	1⅜
Do. ... ... Deb.	Stk.	88½—85½	4	4½	87—90	81½
Ebbw Vale Steel & Iron Ord.	1	18/—16/-	10	10½	2⅝—2⅞	1⅛
Guest, Keen & Nettefids Ord.	1	68/9—61/3	15	5	3⅜—3⅝	3
Do. ... ...Cum. pref.	5	5⅜—5⅝	5	4½	5⅜—5⅛	5¼
Do. ... ... Deb.	Stk.	100½—95½	4	4½	96—98	92½
Hadfield's Steel Foundry Ord.	1	63/—58 9	22½	7½	3 3¼	3⅛
Hawthorn (R. & W.) Leslie Ord.	10	13—12	10	7½	13⅜—13⅝	13¾-14
Ibbotson Bros. ... ... 5 (4 pd.)	7	7—5½	10	7½	6 -6½	6 6½
Jessop (W.) & Sons ... Ord. 5 (4 pd.)	6⅜	6½	15	11½	6⅜—6⅝	6⅜
Lanarkshire Steel ... Cum. pref.	10	7⅜ -6⅛	5	6%	5⅛—6⅜	6
Lysaght (J.) ... Cum. pref.	1	27/6—25/-	6	..	1⅛—1⅜	1⅛
Do. ... ... Deb.	Stk.	108⅜—102⅛	4½	..	10¼—106	—
Manganese Bronze ... Ord.	1	⅜—⅜	6	11	⅜—⅜	⅜
Do. ... ... Cum. pref.	1	1—⅝	6	6½	⅝—1	⅝
North-Eastern Steel ... Deb.	Stk.	89—92	4½	—	—	—
Palmers Ship & Iron "A"	1	⅝—⅜	Nil.	Nil.	⅜—⅝	—
Scott (Walter) ... ... Ord.	1	16/—14/6	5	6½	⅝—¾	⅝—¾
Do. ... ... Deb.	Stk.	86—82	4	4½	81—82	89 - 91
Sheffield Forge ... ... Ord.	1	1⅝—1⅜	12½	7	1⅝—1¾	1⅝
Shelton Iron & Steel ... Deb.	100	99⅜—90	5	5%	93—98xd	93½
S. Durham Steel & Iron Ord.	1	35/—23 6	10	6%	1⅜—1⅛	1⅜
Do ... ... Cum. pref.	1	20/6—19/-	6	5½	1⅜—1⅝	1⅜
Do. ... ... Deb.	Stk.	95—98	4½	4½	90—92	90 92
Steel Co. of Scotland ... Ord.	10	12⅜—8⅜	5	5½	8⅜—9	8⅜ 9⅛
Stewarts & Lloyds Pref. ord.	10	21⅛—20	10	5%	20—21	19
Do. ... ... Cum. pref.	10	14⅞—13¾	6	4½	11⅜—13⅞	13⅞
Stone (J.) ... ... Cum. pref.	10	9⅜—9	5	5%	8⅜—9⅜xd	9
United States Steel ... Ord.	100$	71⅛—50	3	4%	61—61⅛	70
Do. ... ... Cum. pref.	100$	113⅞ -104½	7	6½	112—113	115
Vickers Ltd. ... ... Ord.	1	43/6—33 3	12½	6½	1⅛—1⅜	1
Do. ... ...Pref.	Stk.	106⅛—99	5	5%	104—107	99½
Do. ... ... Deb.	Stk.	100⅜—91⅛	4	5%	98⅛ -98⅜	80
Weardale Steel ... Def. ord.	1	21/—17/-	6	7½	⅝—⅞	—
Do. ... ... Cum. pref.	1	20 1⅜-18/-	6	6½	1⅛—1	—
Do. ... ... Deb.	Stk.	77—73½	4	—	77—80	—
Workington Iron & Steel Ord.	1	16/6—12/3	6	8%	3½—3½	1

SHIPBUILDING AND MARINE ENGINEERING.

Armstrong, Whitworth Ord.	1	60 —39/	12½	6	1⅜—2⅛	1⅛
Do. ... ... Cum. pref.	5	95 —84.6	4	5%	4⅝—4⅞	3⅞
Do. ... ... Deb.	Stk.	98⅛—94⅜	5	5%	96—98	89⅜
Beardmore (W.) ... ... Deb.	100	96⅛—91⅜	4½	5%	94—96	86⅜
Brown (John) ... ... Ord.	1 (15s. pd.)	23/—17 9	12½	9%	1⅜—1⅝xd	1⅝
Do. ... ... Cum. pref.	10	10⅛—8⅛	5	5⅛	9⅜—10xd	9
Cammell Laird ... ... Ord.	5	3⅜ 2⅜	7½	—	3⅜—4⅛	5
Do. ... ... Cum. pref.	5	92/6—79/-	5	6	4½—4⅝	4⅛
Do. ... ... Deb.	100	90½ -84½	4½	5%	92—94	89
Dunlop (Jas.) ... ... Ord.	1	18/6—17/6	Nil.	—	⅛—⅜	—
Do. ... ... Cum. pref.	1	1⅛—⅝	6	7½	⅝—1	⅝
Fairfield Shipbldg Cum. pref.	10	10—7⅞	6	8⅛	—	7⅞
Fleming & Ferguson ... Ord.	10	20½—12¾	10	8%	14¼—14½	15
Gray (Wm.) ... ... Deb.	100	100⅜—100	4½	4½	100-102	100
Henderson (D. & W.) Cum. pref.	1	⅝ 1/16	5	12½	1/16—1/16	—
Richardsons Westgarth Ord.	1	3/6—1/9	Nil.	Nil.	1⅛—⅜	—
Do. ... ... Cum. pref.	1	9/9—4/3	Nil.	Nil.	⅜—⅝	—
Do. ... ... Deb.	Stk.	70—58	4½	6%	55—58	69⅜
Simons (W.) ... Cum pref.	10	10½—10	5	4½	10¼ -10½	10¼
Stephenson (R.) ... ... Ord.	1	66⅜—53	Nil.	Nil.	—	—
Do. ... ... Deb.	Stk.	66½—63	Nil.	Nil.	—	—
Swan, Hunter & W. R. ... Ord.	1	19/10½-16/-	†10	10½	1⅛—1	1⅛
Do. ... ... Cum. pref.	1	19/9—17/9	5	5½	1⅛—1	1⅛
Do. ... ... Deb.	Stk.	90½—88	4½	—	90—93	—
Thornycroft (John I.) ... Ord.	1	27/6—12/6	5	—	⅝—⅞	⅝
Do. ... ... Cum. pref	1	19 3—11/3	6	7½	⅝—¾	11/16
Do. ... ... Deb.	100	94—91	5	5½	88—92	94
Wallsend Slipway ... Ord.	1	1⅛—1⅛	10	—	1⅛—1⅜	—
Do. ... ... Cum. pref.	1	20 —20/-	5	—	1⅛—1⅛	—

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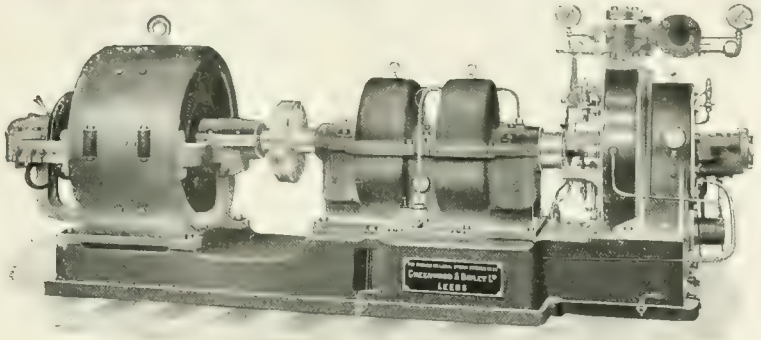

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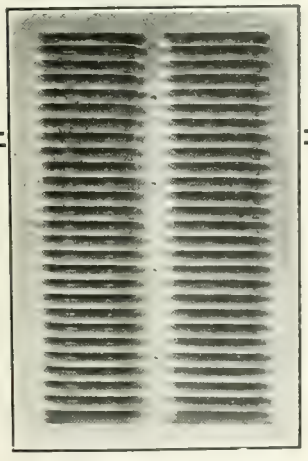

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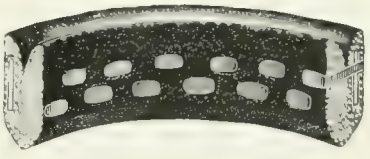

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British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
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Bowran, Robt., & Co., Ltd., Newcastle-on-Tyne.
Delta Metal Co., Ltd., East Greenwich.
McConwell, A., & Co., Ltd., 60, Drury Buildings, Water St., Liverpool.

ARMOUR PLATES—
Brown, John, & Co., Ltd., Atlas Works, Sheffield.

ASBESTOS FITTINGS—
McRobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.

ASBESTOS GOODS— [Town, N.W.
Jones, Fredk., & Co., Ltd., Perren Street, Kentish
Walker, Jas., & Co., 11, Bishop Court, Anderston, Glasgow.

ASH BAGS—
Speedings Ltd., Sail Works, Sunderland.

ASH BINS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

ASH DISCHARGING APPLIANCES—
Mactaggart, Scott & Co., Ld., Loanhead, Edinburgh
Trewent & Proctor, F. J., Ltd., 43, Billiter Buildings, E.C.

AWNINGS—
Speedings Ltd., Sail Works, Sunderland.

BARROWS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

BARROWS (Cargo)—
Edina Manufacturing Co., 19h, Broad Wynd, Leith.

BEDDING & NAPERY— [Glasgow.
Stewart, Archibald & Co., 40-48, Union Street,

BEMAL CONDENSER TUBES—
The Yorkshire Copper Works, Ltd., Leeds.

"BITUMASTIC" ENAMEL MANUFACTURERS—
Wailes Dove Bitumastic Ltd., 5, St. Nicholas Buildings, Newcastle-on-Tyne.

BLINDS—
Laycock, W. S., Ltd., Victoria Works, Millhouses, Sheffield.

BLOCKS—
Bullivant & Co., Ltd., 72, Mark Lane, London, E.C.
Higginson & Co., 7, Hurst Street, Liverpool.

BLOWERS—
Allen, W. H., Son & Co., Ltd., Queen's Engineering Works, Bedford. [Belfast.
Davidson & Co., Ltd., Sirocco Engineering Works,
Keith, James, & Blackman Co., Ltd., 27, Farringdon Avenue, London, E.C.

BOATS—
Crichton, J., & Co., Saltney Shipyard, Chester.
Leitch, John, & Co., The Ferry, Renfrew, Scotland.

BOILERS—
Central Marine Engine Works, West Hartlepool.
Elliot & Jeffery, East Dock, Cardiff.
Harris Bros., Ltd., Cambrian Dry Docks, Swansea.
Hawthorne, R. & W., Leslie & Co., Ltd., St. Peter's, Newcastle-on-Tyne.
Howden, James, & Co., Ltd., Scotland St., Glasgow.
Perman & Co., Ltd., 82-83, Fenchurch Street, E.C.
Wallsend Slipway & Engineering Co., Ltd., Wallsend-on-Tyne.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

BOILER CIRCULATORS—
Beresford Eng'n'ring Co., Beresford Lane, Cardiff.

BOILER CLEANER—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W.

BOILER COMPOSITION—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W.

BOILER COVERING—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W.
Walker, Jas., & Co., 11, Bishop Court, Anderston, Glasgow.

BOILER MOUNTINGS—
Cockburns Ltd., Cardonald, Nr Glasgow.
McRobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.
Royles Ltd., Irlam, Nr. Manchester.

BOILER PLATES (Steel)—
Leeds Forge Co., Ltd., Leeds.
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.
Stewarts & Lloyds, Ltd., 41, Oswald St., Glasgow.

BOILER PRESERVATIVE—
Atlas Preservative Co., Ltd., Deptford, S.E.

BOILER TUBES—
Yorkshire Copper Works, Ltd., Leeds.

BOLTS AND NUTS—
Coventry Chain Co., Ltd., Coventry.

BORING MACHINES—
Campbells & Hunter, Ltd., Dolphin Foundry, Leeds.
Greenwood & Batley, Ltd., Albion Works, Leeds.

BRASS & COPPER FITTINGS—
McRobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.

BRASS & COPPER RODS—
Delta Metal Co., Delta Works, East Greenwich, London, S.E.

BRASS FOUNDERS—
Billington & Newton, Ltd., Longport, Staffs.
Chambers, John, Ltd., Lowestoft.
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow. [Street, Glasgow.
McGeoch, Wm., & Co., Ltd., 28, West Campbell
McRobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.
Williams, Wm., Alexandra Brass Foundry, Cardiff.

BRASS NAME-PLATES—
Metograph Co., 280, Cathedral Street, Glasgow.
Rennie & Co., North Greenhill Road, Paisley.

BRASS TUBES—
Yorkshire Copper Works, Ltd., Leeds.

BRASSWORK—
Laycock, W. S., Ltd., Victoria Works, Millhouses, Sheffield.

BRONZE (Manganese)—
Billington & Newton, Ltd., Longport, Staffs.
Bowran, Robt., & Co., Ltd., 4, St. Nicholas Buildings, Newcastle-on-Tyne.
Callender's Cable & Construction Co., Ltd., Belvedere, Kent.
Delta Metal Co., Ld., E. Greenwich, London, S.E.
Stone, J., & Co., Ltd., Deptford, London, S.E.

BRIGHT STEEL—
Stonehouse Works Co., Ltd., Houghton Street, West Bromwich.

BUCKETS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

BULKHEADS (Patent)—
Hogg-Carr Construction Co., Ltd., Newcastle-on-Tyne.

BUNTING—
Riley, Edward, & Co., Leeds.

BUOYANT DECK SEATS— [Liverpool.
Crichton, C. & H., Ltd., Huskisson Engine Works,
Linkleter's Patent Ship Fittings Co., Hudson Street, North Shields.

BUOYS—
Crichton, C. & H., Ltd., Huskisson Engine Works, Liverpool.
Hingley & Sons, Ltd., Netherton Iron Works, Dudley, Staffs.

CABINET MAKERS—
Stewart, Archibald & Co., 40-48, Union Street, Glasgow.

CABLES (Chains)—
Hingley & Sons, Ltd., Netherton Iron Works, Dudley, Staffs.
Sykes, Richard, & Son, Ltd., Cradley Heath.
Taylor, Samuel, & Sons (Brierley Hill), Ltd., Brierley Hill, Staffs.
Wright, Joseph, & Co., Ltd., Tipton, Staffs.

CAISSONS & DOCK GATES—
Swan, Hunter, & Wigham Richardson, Ltd., Wallsend-on-Tyne.

CALORIFIERS—
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.
Royles Ltd., Irlam, Nr. Manchester.

CAPSTANS (Electric)—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Mactaggart, Scott & Co., Ld., Loanhead, Edinburgh
Stothert & Pitt, Ltd., Bath.

CARGO BLOCKS—
Higginson & Co., 7, Hurst Street, Liverpool.

CARPETS—
Stewart, Archibald & Co., 40-48, Union St., Glasgow.

CASE HARDENING BOXES—
Else, John, & Son, Ltd., 48, Muntz St., Birmingham

CASE HARDENING COMPOSITION—
Else, John, & Son, Ltd., 48, Muntz St., Birmingham

CASE HARDENING OIL—
Else, John, & Son, Ltd., 48, Muntz St., Birmingham

CAST BRASS PLATES—
Brown, Robert, & Co., 12, Espedair St., Paisley.

CASTINGS (Steel)—
Brown, John, & Co., Atlas Works, Sheffield, and Clydebank, Nr. Glasgow.
Darlington Forge Co., Ltd., Darlington.
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.
Stewarts & Lloyds, Ltd., 41, Oswald St., Glasgow.

CASTINGS (Steel, Iron and Brass)—
Chambers, John, Ltd., Lowestoft.
Darlington Forge Co., Ltd., Darlington.
Hamilton, A., & Sons, 13, Bute Crescent, Docks, Cardiff.
McRobie, John & Sons, 94, Elliott Street, Cranstonhill, Glasgow.

CEMENT—
Aberthaw & Bristol Channel Portland Cement Co., Ltd., Merthyr House, Cardiff.

CHAINS—
"The Coventry" Chain Co., Ltd., Spon End Works, Coventry.

COAL—
Beynon, T., & Co., Ltd., Merthyr House, Cardiff.
Britannic Merthyr Coal Co., Ltd., Cambrian Bldgs., Cardiff.
Cambrian Collieries, Ltd., Cambrian Bldgs., Cardiff.
Davis, D., & Sons, Ltd. Cymric Bldgs., Cardiff.
Ebbw Vale Steel, Iron & Coal Co., Ltd., Merthyr House, Cardiff.
Fernhill Collieries, Ltd., Merthyr House, Cardiff.
Glamorgan Coal Co., Ltd., Cambrian Bldgs., Cardiff.
Harrisons (London), Ltd., 66, Mark Lane, E.C.
Naval Colliery Co. (1897), Ltd., Cambrian Bldgs., Cardiff.
Newport Abercarn Black Vein Steam Coal Co., Ltd., Merthyr House, Cardiff.
Powell Duffryn Steam Coal Co., Ltd., Cardiff.
Rhymney Iron Co., Ltd., Merthyr House, Docks, Cardiff.

COMPASSES (Ship)—
Chadburn's (Ship) Telegraph Co., Ltd., Cyprus Road, Bootle, Lancs.

CONDENSERS—
Belliss & Morcom, Ltd., Birmingham.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Contraflo Condenser & Kinetic Air Pump Co., Ltd., 3, Central Buildings, Westminster, S.W.
Dawson & Downie, Elgin Works, Clydebank.
Royles Ltd., Irlam, Nr. Manchester.
Weir, G. & J., Ltd., Cathcart, Glasgow.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

CONDENSER TUBES (Brass and Copper)—
The Yorkshire Copper Works, Ltd., Leeds.

CONTROLLERS & CONTROL GEAR—
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.

CONVEYORS—
Mather & Platt, Ltd., Manchester.

COOKING APPARATUS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.
Grieve, T., & Sons, Bedford Street, North Shields.

COPPER PIPES—
Yorkshire Copper Works, Ltd., Leeds.

COPPERSMITHS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.
Chambers, John, Ltd., Lowestoft.
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.
Royles Ltd., Irlam, Nr. Manchester.

COPPER TUBES—
Yorkshire Copper Works, Ltd., Leeds.

CORK INSULATION—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W. [Newcastle-on-Tyne.
Newalls Insulation Co., 31, Mosley Street,

CORRUGATED IRON—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

COUNTER (Engine)—
Chadburn's (Ship) Telegraph Co., Ltd., Cyprus Road, Bootle, Lancs.

CRAB WINCHES—
Bullivant & Co., Ltd., 72, Mark Lane, London, E.C.

CRANES—
Ransomes & Rapier, Ltd., 32, Victoria Street, London, S.W.
Stothert & Pitt, Ltd., Bath.

CYLINDERS (Copper)—
The Yorkshire Copper Works, Ltd., Leeds.

DELTA METAL—
Delta Metal Co., Delta Works, East Greenwich, S.E.

DERRICKS & DAVITS (Tubular Steel)—
Stewarts & Lloyds, Ltd., 41, Oswald St., Glasgow.

DISTILLING APPARATUS—
Royles Ltd., Irlam, Nr. Manchester.

DIVING APPARATUS—
Heinke, C. E., & Co., 88, 89, Grange Road, Bermondsey, S.E.
Mining Engineering Co., Ltd., Meco Works, Moorfields, Sheffield.

DOCK & SHIP LIGHTING—
Carbic Ltd., 51, Holborn Viaduct, London, E.C.

DOCK GATES—
Chalmers, Wm., & Co., Ltd., Rutherglen, Nr. Glasgow.
Hamilton, Wm., & Co., Ltd., Port Glasgow, Scotland.
Swan, Hunter & Wigham Richardson, Ltd., Wallsend-on-Tyne.

DOORS (Watertight)—
British Thomson-Houston Co., Ltd., Rugby.
Stone, J., & Co., Ltd., Deptford, S.E.

BUYERS' GUIDE—*continued.*

DREDGE PLANTS—
[illegible]

DREDGING
[illegible]

DRILLING MACHINES
Campbells & Hunter Ltd., Dolphin Foundry, Leeds.

DRILLS—
[illegible]

DRILLS (Pneumatic and Electric)—
[illegible]

DRY FITTINGS (Laundry)—
[illegible]

DYNAMOS—
Allen, W. H., Son & Co., Ltd., Queen's Engineering Works, Bedford.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.

ELECTRIC CRANES—
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [Edinburgh.
Mactaggart, Scott & Co., Ltd., Loanhead,
Mather & Platt Ltd., Manchester.
[illegible]

ELECTRIC DERRICKS—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park Manchester.

ELECTRIC DYNAMOS & MOTORS—
[illegible]
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Greenwood & Batley, Ltd., Albion Works, Leeds.
Holmes, J. H., & Co., Portland Road, Newcastle-
Mather & Platt, Ltd., Manchester. on-Tyne.
Sunderland Forge & Engineering Co., Ltd.,

ELECTRIC FITTINGS— Sunderland.
[illegible]

ELECTRIC HEATING & COOKING APPARATUS—
British Thomson-Houston Co., Ltd., Rugby.
McGeoch, Wm., & Co., Ltd., 28, West Campbell Street, Glasgow.

ELECTRIC LAMPS—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
McGeoch, Wm., & Co. Ltd., 28, West Campbell St., Glasgow.

ELECTRIC LIGHTING—
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRIC-LIGHTING PLANT—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Greenwood & Batley, Ltd., Albion Works, Leeds.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRIC MOTORS—
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Greenwood & Batley, Ltd., Albion Works, Leeds.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRIC WIRES—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.

ELECTRICAL CONTRACTORS—
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow. [Glasgow.
Martin, W. C., & Co., 10, West Campbell Street,
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRICAL ENGINEERS—
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Chadburn's (Ship) Telegraph Co., Ltd., Cyprus Road, Bootle, Lancs.
Graham, Alfred, St. Andrew's Works, Crofton Park Road, S.E.
Holmes, J. H., & Co., Portland Road, Newcastle-
Mather & Platt, Ltd., Manchester. [on-Tyne.
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRICAL INSTRUMENTS (Ammeters)
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-

ELECTRICAL INSTRUMENTS (Circuit Breakers)—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.

ELECTRICAL INSTRUMENTS (Relays)—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.

ELECTRICAL INSTRUMENTS (Voltmeters)—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-

EMERY WHEELS—
Sterne, L., & Co., Ltd., Crown Iron Works, Glasgow

ENAMEL MANUFACTURERS—
Holzapfels, Ltd., Newcastle-on-Tyne.
Wailes Dove Bitumastic Ltd., 5, St. Nicholas Buildings, Newcastle-on-Tyne.
Websters Ltd., Hull.

ENGINE (Electric Light)—
Bellis & Morcom, Ltd., Birmingham.
Greenwood & Batley, Ltd., Albion Works, Leeds.

ENGINES (Land)—
Chambers, John, Ltd., Lowestoft.

ENGINES (Marine)—
Allen, W. H., Son & Co., Ltd., Queen's Engineering Works, Bedford.
Central Marine Engine Works, West Hartlepool.
Chambers, John, Ltd., Lowestoft.
Hawthorne, R. & W., Leslie & Co., Ltd., St. Peter's, Newcastle-on-Tyne.
Howden, James, & Co., Ltd., Scotland St., Glasgow.
Perman & Co., Ltd., 82-83, Fenchurch Street, E.C.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

ENGINE & DECK STORES—
McGeoch, Wm., & Co., Ltd., 28, West Campbell Street, Glasgow.
Metallic Valve Co., Colonial House, Water Street, Liverpool.

ENGINE AUXILIARIES—
Aspinall's Patent Governor Co., 7, Strand Street, Liverpool.

ENGINE FITTINGS—
Aspinall's Patent Governor Co., 7, Strand Street, Liverpool.
McRobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.

ENGINE-ROOM OUTFITS—
Grieve, T., & Sons, Bedford Street, North Shields.
Newalls Insulation Co., 31, Mosley Street,

ENGRAVERS— Newcastle-on-Tyne.
Brown, Robert, & Co., 12, Espedair St., Paisley.

EVAPORATORS—
Central Marine Engine Works, West Hartlepool.
Royles Ltd., Irlam, Nr. Manchester.
Weir, G. & J., Ltd., Cathcart, Glasgow.

EXTRUDED METALS (Brass, Bronze, Copper, Delta Metals)—
Delta Metal Co., Ltd., E Greenwich, London, S.E.

FANS—
Adam, J. M., & Co., Greenfield Iron Works, Dalmarnock, Glasgow.
Allen, W. H., Son & Co., Ltd., Queen's Engineering Works, Bedford.
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [Belfast.
Davidson & Co., Ltd., Sirocco Engineering Works,
Hogan & Wardrop, 2, Gresham Buildings, Basinghall Street, London, E.C.
Keith, James, & Blackman Co., Ltd., 27, Farringdon Avenue, London, E.C.

FEED-WATER HEATERS—
[illegible]

FILES—
Brown, John, & Co., Atlas Works, Sheffield.
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.

FILTERS (Marine)—
Central Marine Engine Works, West Hartlepool.
Chambers, John, Ltd., Lowestoft.
Cockburns Ltd., Cardonald, Nr. Glasgow.
Mather & Platt, Ltd., Manchester.

FIREBARS—
Liverpool Patents Co., Ltd., Derby Square, James Street, Liverpool.

FIRE EXTINGUISHERS—
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.
Mather & Platt, Ltd., Manchester.

FIRE-FIGHTING APPLIANCES—
Minimax Engineering Co., Ltd., Meco Works, Sheffield.

FLAGS—
Riley, Edward, & Co., Leeds.
[illegible]

FLOATING DOCKS—
Chalmers, Wm., & Co., Ltd., Rutherglen, Nr. Glasgow. [Scotland.
Hamilton, Wm., & Co., Ltd., Port Glasgow,
Swan, Hunter, & Wigham Richardson, Ltd., Wallsend-on-Tyne.

FLOOR COVERING—
Docker Bros., Ltd., Metropolitan Road, Saltley, Birmingham.

FORCED DRAUGHT—
Adam, J. M., & Co., Greenfield Iron Works, Dalmarnock, Glasgow. [Belfast.
Davidson & Co., Ltd., Sirocco Engineering Works,
Howden, J. & Co., Ltd., Scotland Street, Glasgow.
Keith, James, & Blackman Co., Ltd., 27, Farringdon Avenue, London, E.C.

FORGING PRESSES—
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
Mactaggart, Scott & Co., Ltd., Loanhead, Edinburgh.

FORGINGS—
Brown, John, & Co., Ltd., Atlas Works, Sheffield.
Darlington Forge Co., Ltd., Darlington.
Hingley & Sons, Ltd., Netherton Iron Works, Staffs.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

FORGINGS (Bronze)—
Delta Metal Co., Delta Works, East Greenwich, London, S.E.

FORGINGS (Steel)—
Brown, John, & Co., Ltd., Atlas Works, Sheffield.
Darlington Forge Co., Ltd., Darlington.
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.

FUMIGATORS—
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.

FURNACE BRIDGES—
Hamilton, A., & Sons, 13, Bute Crescent, Docks, Cardiff.
McConwell, A., & Co., Ltd., 60, Drury Buildings, Water Street, Liverpool.

FURNACES—
Brown, John, & Co., Ltd., Atlas Works, Sheffield.
Deighton's Patent Flue & Tube Co., Ltd., Vulcan Works, Pepper Road, Leeds.
Leeds Forge Co., Ltd., Leeds.
Piggott, T., & Co., Ltd., Birmingham.

FUSES—
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.

GALLEY GEAR—
Grieve, T., & Sons, Bedford Street, North Shields.

GALVANIZERS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

GAS ENGINES—
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Mather & Platt, Ltd., Manchester.

GAUGES—
Chatwin, Thos., Ltd., Gt. Tindal St., Birmingham.

GEAR CUTTING—
Campbells & Hunter, Ltd., Dolphin Foundry, Leeds

GEARING—
Campbells & Hunter, Ltd., Dolphin Foundry, Leeds.

GEARS—
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.

GEARS (Noiseless or Silent)—
British Thomson-Houston Co., Ltd., Rugby.
Brown, David, & Sons (Hfd.), Ltd., Huddersfield.

GOVERNORS—
Aspinall's Patent Governor Co., 7, Strand Street, Liverpool.

GRINDING MACHINES—
Greenwood & Batley, Ltd., Albion Works, Leeds.

GRINDING WHEEL MACHINES—
Sterne, L., & Co., Ltd., Crown Iron Works, Glasgow

HATCH COVERS (Patent)—
Hogg-Carr Construction Co., Ltd., Newcastle-on-Tyne.

HEATING APPARATUS—
Ashwell & Nesbit, Ltd., Barkby Lane, Leicester.
Royles Ltd., Irlam, Nr. Manchester.
Saunders & Taylor, Ltd., 43, Lower Mosley Street, Manchester.

HEATING ENGINEERS—
Ashwell & Nesbit, Ltd., Barkby Lane, Leicester.
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.
Royles Ltd., Irlam, Nr. Manchester.
Saunders & Taylor, Ltd. 43, Lower Mosley Street, Manchester.

HELM SIGNAL TELEMOTORS—
Mactaggart, Scott & Co., Ld., Loanhead, Edinburgh

HIGH SPEED DRILLS—
Brown, John, & Co., Atlas Works, Sheffield.

HIGH SPEED STEEL—
Brown, John, & Co., Atlas Works, Sheffield.

HOISTS—
Mather & Platt, Ltd., Manchester.
Stothert & Pitt, Ltd., Bath.
Waygood-Otis, Ltd., Falmouth Road, S.E.

BUYERS' GUIDE—*continued.*

HOSE—
Heinke, C. E., & Co., 88, 89, Grange Road, Bermondsey, London, S.E.

HYDRAULIC CRANES—
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
Brown Brothers & Co., Ltd., Rosebank Iron Works, Edinburgh.
Mactaggart, Scott & Co., Ld., Loanhead, Edinburgh

HYDRAULIC MACHINERY—
Armstrong, Sir W. G., Whitworth & Co., Ltd., Elswick Works, Newcastle-upon-Tyne.
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
Waygood-Otis, Ltd., Falmouth Road, S.E.

HYDRANTS—
McRobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.

INDIARUBBER—
Heinke, C. E., & Co., 88, 89, Grange Road, Bermondsey, London, S.E.

INDICATORS—
Robinson, A., & Co., Ltd., Bootle, Liverpool.

INDUCED DRAUGHT—
Davidson & Co., Ld., Sirocco Eng'n'g W'rks, Belfast
Keith, James, & Blackman Co., Ltd., 27, Farringdon Avenue, London, E.C.

INSULATIONS—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W. [Liverpool.
Liverpool Refrigeration Co., Ltd., Colonial House,

IRON ROOFS AND BUILDINGS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

JOINTING MATERIAL (Manganesite)—
Hudson & Co.'s Successors, John, 15, Victoria Warehouses, Mansell Street, E.C.

LAMPS AND LIGHTS—
Grieve, T., & Sons, Bedford Street, North Shields.
Kaye, Joseph, & Sons, Ltd., Leeds.

LAUNCHES—
Chambers, John, Ltd., Lowestoft.
Crichton, J., & Co., Saltney Shipyard, Chester.
Leitch, John, & Co., The Ferry, Renfrew, Scotland.
Livingstone & Cooper, Ltd., Hessle, Hull.
MacLaren Bros., Ltd., Dumbarton.
Perman & Co. Ltd., 82-83, Fenchurch St., E.C.
Seamless Steel Boat Co., Ltd., Wakefield.
Thornycroft, John I., & Co., Ltd., Caxton House, Westminster, London, S.W.
Watson, J. S., Gainsborough.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

LAUNDRY MACHINERY—
Bradford, T., & Co., Salford, Manchester.

LAVATORY FITTINGS AND APPLIANCES—
Levick, John, Alma Street, Aston, Birmingham.

LEAD (Sheets and Pipes)—
Rimer Bros., Newcastle-on-Tyne.

LEAD (White and Red)—
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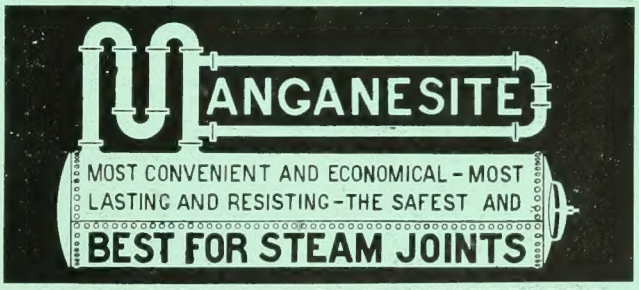

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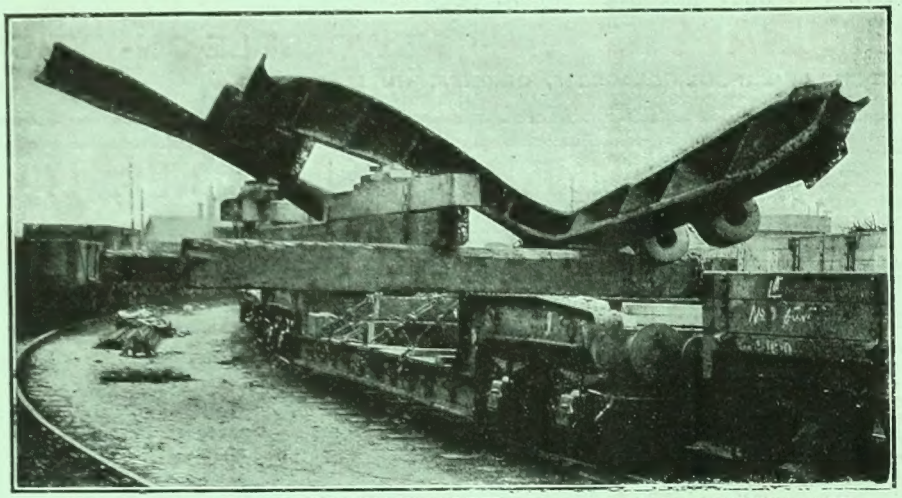

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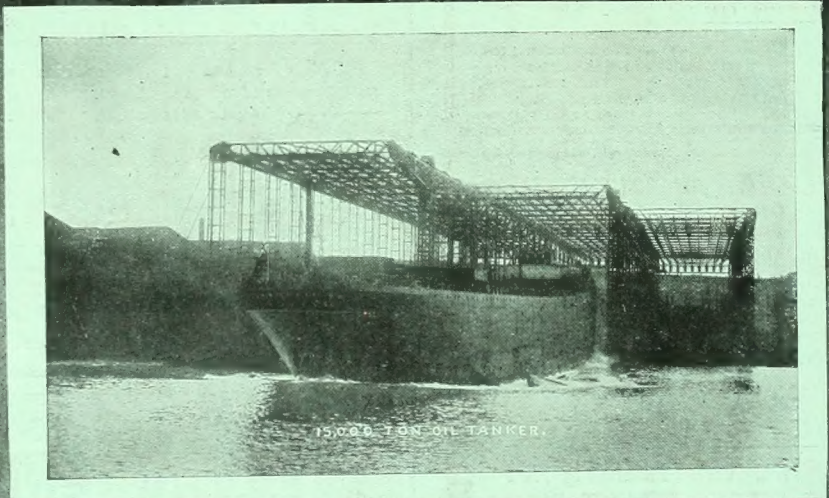

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